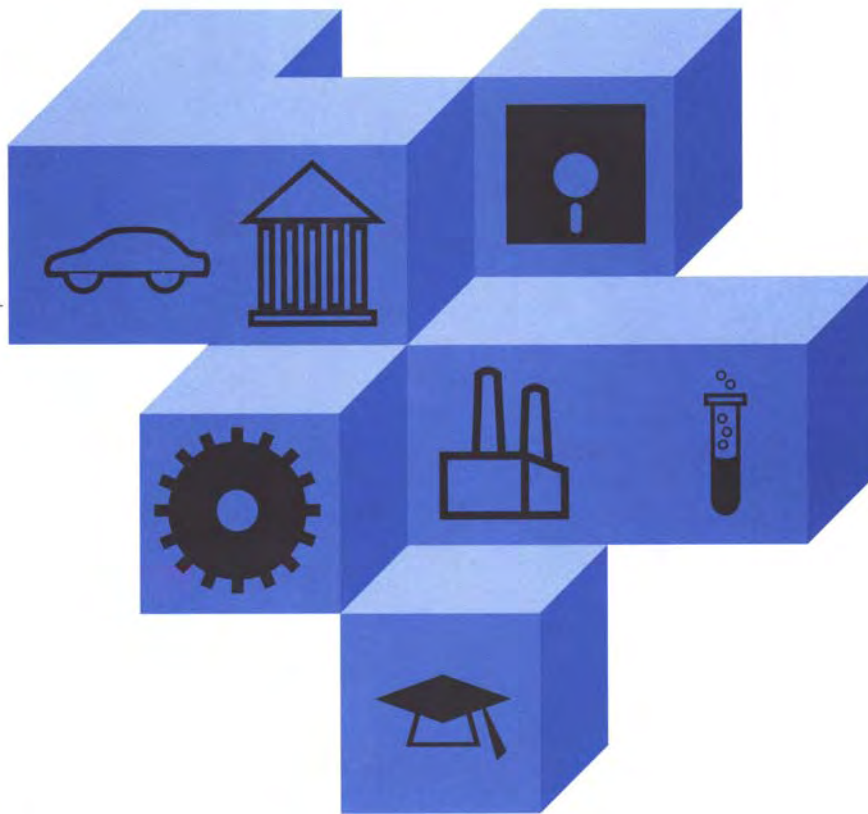


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Cluster-Based Economic Development:

A Key to Regional Competitiveness



Economic Development Administration
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Cluster-Based Economic Development: A Key to Regional Competitiveness

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The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the Economic Development Administration.

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Chapter I

Introduction: The importance of industry clusters

Profound changes have been reshaping the world's economy during the past three decades, and economic development efforts are changing as well. The ability to apply knowledge and information in new ways is becoming an increasingly important source of value-added in all areas of economic activity. International trade and communications have enabled, for the first time, a global production system with widely distributed business units. New technologies are changing how we live and work, making production processes and services more efficient. Collectively, these forces are altering the nature of competition and economic success for businesses and communities.

Across all types of business, product development cycles are becoming shorter, leading firms to form more flexible systems to move products from concept stage to the marketplace with greater agility. Old corporate structures of undiversified, vertically integrated companies are giving way to networks of smaller, specialized firms able to respond more quickly to changing market dynamics. Even while large corporations are merging to increase their strength in the international marketplace, they are becoming leaner, focusing more on core business, and leading networks of strategic partners. This has profound significance for the future of regions and how they form, expand and attract industrial activity within their increasingly dynamic economies.

Our economy is changing in terms of growth opportunities and adjustment challenges. This fact alone has done much to stimulate new thinking and practice in economic development. Despite nearly two decades of relatively uninterrupted prosperity, the economy today is a continuing source of uncertainty and concern. Jobs, while plentiful, can be part-time and insecure. Career paths are uncertain and the days of a lifelong job at the local factory or corporate office seem to be a thing of the past. In some cases, entire communities appear to have been disconnected from the sources of economic dynamism that have driven other places to unprecedented levels of prosperity.

Many economic development leaders have been able to guide their regions through a process that builds upon an understanding of their region's changing economy and in doing so have helped forge a vision and develop commitments for necessary action. Drawing on case studies of 17 initiatives and more than a decade of state and local experience in regional economic development, this report describes a framework for regional economic development based on the recognition that healthy

regional economies are composed of clusters and their supporting economic infrastructure. While this framework must be adapted to the unique circumstances of each region, it has proven to be useful for bringing regional stakeholders together to address pressing economic concerns and create the foundations for sustained competitiveness into the 21st century.

**Industry clusters:
A key to competitiveness
in the new economy**

Partly driving and partly reacting to the economic changes underway, industry structures are evolving to better respond to the competitive demands of today's knowledge-based, technology-intensive, global economy. These evolving structures consist of clusters of interrelated, geographically-concentrated industries along with their key suppliers and their supporting economic institutions. Figure I-1 below portrays the typical structure of an industry cluster. The simultaneous competition and collaboration that occurs among the region's firms and institutions helps industries make the most of worker skills and new technological opportunities to improve efficiency, develop innovative products, and succeed in new markets.

Figure I-1 Structure of an industry cluster

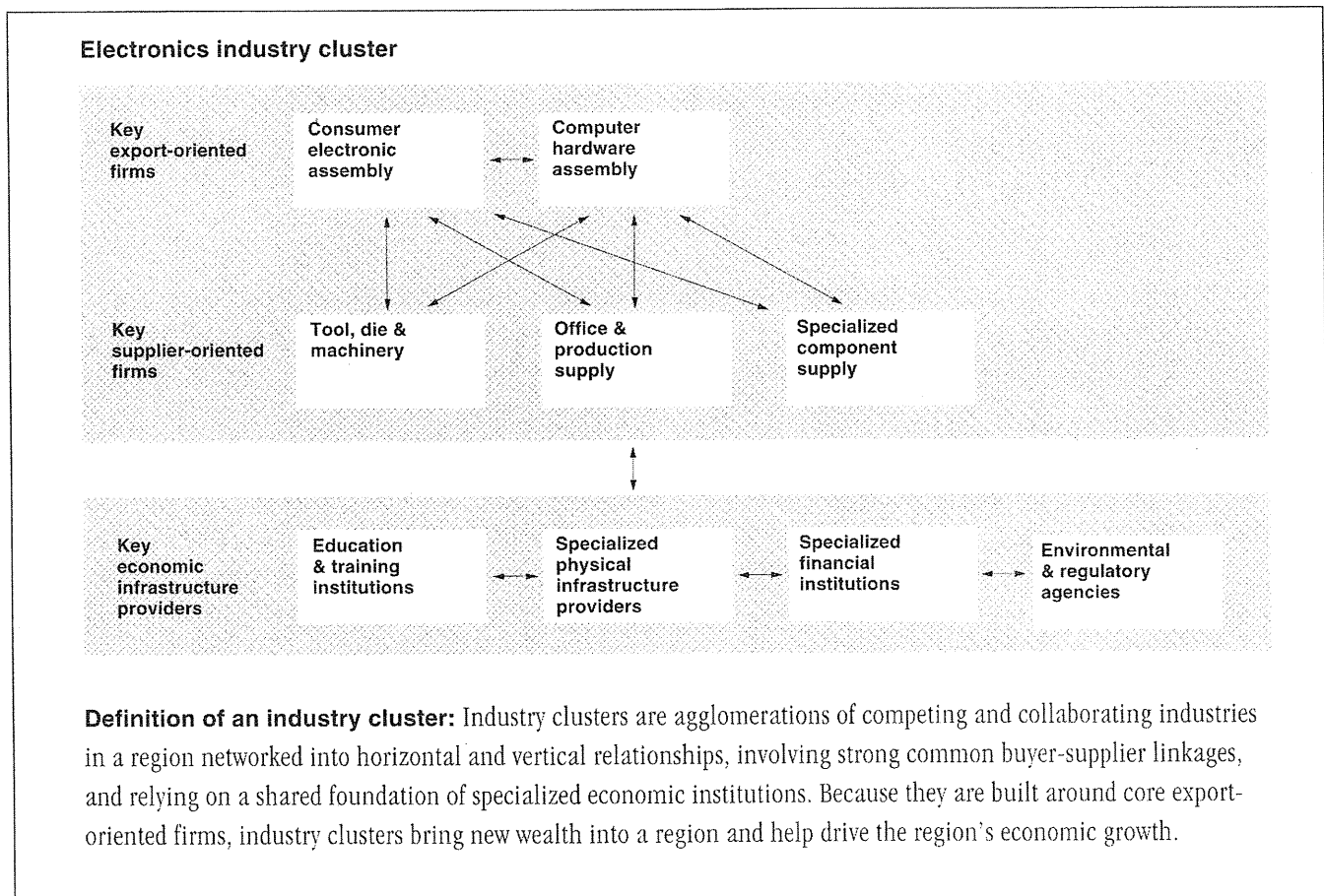


Exhibit I-1 Not every region's clusters are the same

Export level: Some regions have a variety of export-oriented, producer firms in a range of industries while others lack cluster breadth. Regions also vary in the presence of corporate headquarters which may affect firms' abilities to participate in cluster-based strategies.

Intermediate supplier level: Some regions have strong agglomerations of suppliers but few buyers within region (and hence an interest in networks for linking to out of region buyers, e.g. cluster networking).

Economic institution level: Regions may have world-class institutions to support their clusters or regional assets that should be developed to better respond to the needs of specific clusters.

Economic infrastructure: A key to cluster performance

Industry cluster competitiveness derives not only from the concentration of related industries, suppliers and services in the same place, but also from access to highly specialized economic inputs that are not usually provided solely by the business sector. These resources, often referred to as "economic infrastructure" or "foundations," include: workforce skill training, transportation and communication infrastructure, and efficient regulatory procedures. Industrial concentration encourages the development of economic foundations that are tailored to the needs of a region's clusters, providing crucial sources of competitive advantage.

Seven major categories of economic infrastructure are highlighted by the cluster-based development initiatives examined in this report:

- *Adaptable skills:* Education and training systems to prepare, advance and renew workers' skills for specific and changing markets.
- *Accessible technology:* Systems to discover and develop scientific innovations and to facilitate the deployment of technology into the commercial marketplace.
- *Adequate financing:* Access to financing for initiating, expanding or transforming enterprises.
- *Available infrastructure:* Transportation, power, and environmental systems that enable efficient operations.
- *Advanced communications:* Telecommunications, data and information processing capacity to support advanced business operations.

- *Acceptable regulatory and business climate:* Reasonable costs and efficient administrative procedures for doing business in the region.
- *Achievable quality of life:* Provision of public safety, adequate housing, health care, and cultural and recreational amenities.

Collaboration: How economic infrastructure for clusters is improved

When regions have been successful at nurturing industry clusters they typically have developed high quality, economic institutions, responsive to the specialized needs of existing and emerging clusters in the region. When this occurs strong civic leadership and collaboration—among organizations, across sectors, and across different communities in the region—have often been central to success. This regional culture creates what could be called “collaborative advantage.” Competitive nations and regions have always been characterized by the ability of enterprises to work together—whether as buyers and suppliers, strategic partners, consortia or enterprise networks. This is what defines a market—buyers and suppliers working with each other and using proximity and economies of scale to improve innovation and access to markets. Many successful economies have found that public-private collaboration is also a hallmark of the ability of economies to support their industries and adapt to economic cycles. Such collaboration is most effective when it serves to keep economic infrastructure systems in step with the changing market requirements of industry clusters.

An economic development approach based on understanding industry clusters and meeting their economic infrastructure needs can assist economic development leaders in identifying the industries that are key to the region’s economic future¹ and in developing the information and civic collaboration that is essential to achieving the region’s economic development goals. This report provides an introduction to cluster-based economic development through case studies and lessons learned from the experience of American regions.

Chapter II

Gauging your need for cluster-based development

The purpose of this report is to assist community leaders from both the public and private sectors in determining when and how cluster-based development is an appropriate economic development approach for their region. To do so, 17 cluster-based development initiatives were selected for study. These 17 initiatives were chosen to be representative of the wide range of economic conditions and strategic planning techniques that are part of cluster-based strategy projects. They include projects initiated by public sector officials, business leaders, and public-private partnerships; projects funded by the private sector, the federal government, states and localities; projects carried out by states, urbanized metropolitan centers, and less economically developed regions; projects in the earliest stages of strategy development and projects already well into implementation of a region's cluster development plan. A brief overview of the 17 initiatives is shown in Exhibit II-1. More detailed information is provided in the case studies in a separate publication.

Cluster strategy as a tool for change

While the broad forces of economic change are affecting communities nationwide, no two regions face identical challenges in adapting to change. Economic development leaders must, therefore, seek an approach that is adaptable to the political, economic and social circumstances of their region. The cluster framework for economic development can be a valuable tool for effective change for the following reasons:

Market driven

A primary value of the cluster-based approach is that it is market-driven. The basic logic of cluster-based regional economic development strategy is to help markets work more effectively by bringing together the region's key industries (demand-side) with their many private and public sector sources of economic inputs (supply-side) from the region.

Inclusive

The cluster approach to economic development is designed to reach out to companies large and small as well as suppliers and supporting economic institutions. In this way a cluster approach brings all of the region's stakeholders together. In many cluster initiatives businesses and regional institutions face each other across a table for the first time.

Collaborative

A special quality of cluster-based economic development is that it places a great emphasis on the development of collaborative solutions. This is different from “experts” or “blue ribbon committees” proposing recommendations. In cluster-based collaborative solutions, representatives from the user and supplier side of the economy develop actions together for which they will be accountable.

In South East Los Angeles companies and institutions, including community colleges, banks, and regulatory agencies, were brought together in cluster groups, often for the first time. By learning about each other both economically and personally, the possibility that change and innovation were feasible became more clear. Often economic development suffers simply from the absence of a process for convening those who have problems and those who have resources so they can better learn about each other and make pragmatic and sometimes innovative changes.

Strategic

Cluster-based economic development helps stakeholders create a strategic vision of their region’s next-generation economy. A strategy based on cluster development possibilities helps maintain the focus of economic development activities in the region on core, shared, economic concerns. A strategic vision, shared by many different constituencies within a region, can also be an important motivation for a commitment to implement a region’s economic development strategy. In addition, a shared, comprehensive vision helps integrate development activities around the region, emphasizing complementarity rather than competition in related efforts.

In Austin, Texas, a cluster-based strategy developed in the mid-1980s envisioned moving Austin from a relatively quiet state capital and university town, to a much broader based, high-growth, information technology-driven economy. In pursuit of this vision, public and private sector leaders worked together to develop research strength in electronics in the region by attracting two national research consortiums (Microelectronics & Computer Consortium and SEMATECH); restructuring and expanding university science and engineering programs; and recruiting electronics manufacturers and suppliers. Today, the picture of Austin’s economy shows a growing set of technology manufacturing and services industry clusters with comprehensive strength in research and development, production and business services.

Value creating

A fundamental function of cluster-based strategy is value creation. For example, a cluster initiative may create vertical-linkages in the regional economy by helping exporting industries find and recruit new local suppliers or business services that will enhance productivity and generate more local employment. Often, the presence of a concentration of many firms in specific sectors of a cluster ends up attracting other similar or related producers as well as spin-offs and start-ups—these are horizontal

Exhibit II-1 Overview of cluster-based development initiatives

Region	Economic Challenge	Cluster Development Strategy
State of Arizona	Rapid population-driven growth, but concentrated in lower wage sectors and highly vulnerable to cyclical changes in economic conditions.	Grow emerging, technology-based industries such as optics, software and environmental services.
State of California	Recession aggravated by defense industry downsizing and environmental quality problems.	Launch advanced transportation industries building on aerospace, software, and environmental engineering talent released by defense industry.
State of Connecticut	Recession combined with downsizing at federal defense contractor firms and high business costs.	Strengthen existing clusters by actions to add value and accelerate diversification through providing advantages to emerging clusters (optoelectronics).
State of Florida	Economic growth driven by tourism and retirement income with weak indigenous industry development.	Help emerging business services and technology industries grow higher value-added manufacturing clusters through an improved statewide economic infrastructure system.
State of Ohio	Reductions in federal spending on defense and space research.	Strengthen and adapt supply-side inputs of aerospace research and production to serve federal and commercial markets.
State of Oregon	The recession of the 1980s led to a state-wide economic strategy effort supported by a state lottery.	Establish "Oregon Shines" to form 25 industry partnerships, each of which focused upon industry actions, such as training, research, capital, marketing
State of Washington	Decline of federal defense spending leading to cuts in aerospace industry.	Create "flexible manufacturing networks" to improve collaboration among small and medium enterprise to pursue opportunities in non-military markets.
Camino Real (El Paso, TX-Chihuahua, Mexico-NM)	Low income, slow growth economy facing new competitive pressures, particularly due to NAFTA reductions in trade barriers.	Increase cross-border industry and government cooperation to remove constraints on regional economic development.
Monterey Bay Area, California	Closure of military base and limited alternative industry development.	Develop a center to harness the research and training expertise of the region's 20+ institutions to support growth of emerging information, environment, multimedia and biotechnology clusters.

Exhibit II-1 Overview of cluster-based development initiatives (cont.)

Region	Economic Challenge	Cluster Development Strategy
Silicon Valley, California	Defense cutbacks, increased global competition and regional business climate difficulties.	Implement collaborative initiatives to improve training, communications, and finance infrastructure for the region's advanced technology clusters.
South East Los Angeles, California	Decline of federal defense spending and downsizing of related federal facilities and contractors.	Take advantage of growing foreign trade & planned construction of the Alameda Corridor to create business and job opportunities in trade & transportation, and link to surrounding clusters.
Ventura County, California	Downsizing of defense-related contractor firms, with economic conditions worsened by the Northridge earthquake.	Link technology competencies of defense firms to commercial applications for the region's health, environmental, media, agribusiness clusters.
Jacksonville, Florida	Population-driven growth combined with downsizing of military facilities and environmental quality problems.	Create manufacturing and higher-value service sector jobs by developing health services & medical products manufacturing industry cluster with supporting business services, trade and tourism.
St. Louis, Missouri	Downsizing of defense-related federal facilities and contractors combined with longer-term decline in heavy manufacturing industries.	Target "critical technology" competencies in the region to build new, high value-added clusters in biotech/agriculture, environment/energy, and telecommunications.
Southwestern Pennsylvania	Long-term decline of heavy manufacturing industry.	Reorient regional economic infrastructure to support growth of high technology industries (e.g. biotech) and advanced manufacturing.
East Tennessee (Knoxville to Oak Ridge)	Downsizing of national laboratory and weakened competitive position of traditional manufacturing sectors.	Leverage technology assets of the national lab to diversify and strengthen traditional and emerging clusters in East Tennessee economy.
Austin, Texas	Low growth economy dependent on non-market sectors (i.e. state government and a public university).	Build electronics & communications industry cluster with diversified strength in R&D, manufacturing and related business services.

linkages in the economy. Depending on a region's size and industrial diversity, its cluster development strategy may aim to broaden a cluster's competitiveness across a range of functions, or may focus on strengthening particular niche activities and linking these specialized strengths to nearby clusters. The cluster-based approach illuminates opportunities to grow the economy by moving to higher value-added activities.

Arizona was one of the fastest growing states in the nation in the early 1980s. However, its growth was largely driven by population increases and was concentrated in low wage and highly cyclical real estate, construction and services sectors. Using a cluster-based approach, a group of private sector entrepreneurs established a strategic planning process focusing on eight growing industry clusters in the state and three less well-performing, but important clusters. Of the eight growing clusters, six smaller, newer clusters—Information, Health & Biomedicine, Transportation & Distribution, Optics, Environmental Technology, and Software—were classified as “emerging,” and the remaining two more developed clusters—Business Services and Tourism—were classified as “expanding.” As a result of Arizona's strategic planning process, many concrete initiatives have been created in the emerging clusters. Most notably, the Optics, Software, and Environmental Technology clusters have established an export program that has generated approximately \$13 million in new sales since 1995.

St. Louis, Missouri by 1990 was in need of a new direction, suffering from the general decline of heavy manufacturing in the U.S. and coming cuts in federal defense spending. Spurred by federal support to develop a defense adjustment plan, St. Louis industry leaders established a Critical Technologies Partnership in 1993 with the goal of diversifying the economy and capturing higher value-added growth. The Partnership has targeted regional expertise in agriculture/biotechnology, environment/energy, and telecommunications. It is developing a range of research, commercialization, infrastructure and training initiatives to leverage these emerging industries in a strategy for cluster growth.

Five examples of the cluster framework

Cluster-based strategy has been used effectively at every scale of action, from statewide economic strategies or science and technology policies, to feasibility analyses for technology parks, business incubators and enterprise funds. The cluster-based approach needs to be adapted by each economic region to the specific challenges it faces. The nature of the “cluster logic” may vary substantially from one region to the next.

Trade impacted regions—Enhance interdependence for mutual, high-value growth

As trade barriers have fallen and international competition has heated up in recent years, the resulting industrial restructuring is creating severe economic dislocation

in many regions. Whether due to new trade agreements such as the North American Free Trade Agreement (NAFTA) or an influx of new, more competitive products from overseas, regions such as El Paso, Texas, the State of Arizona, Southwestern Pennsylvania, Silicon Valley and South East Los Angeles County (SELAC), have witnessed dramatic changes in their competitive environment. These regions and many others have found that they can no longer prosper in traditional industries on the basis of low-cost manufacturing. Instead, they have discovered the need to develop the types of advanced economic foundations that can stimulate growth of high value-added, knowledge-intensive industries. These regions have used cluster analysis to identify their highest value-added economic opportunities and formulate action-oriented development plans.

El Paso, Texas presents a clear example of the effective use of a cluster-based strategy to identify a region's competitive advantages and mobilize resources for change. Cluster analysis has helped demonstrate the economic linkages among the Greater El Paso area, the State of Chihuahua, Mexico and Eastern New Mexico, a region covering the old Camino Real trading route. Analysis initially conducted separately by Chihuahua and El Paso showed that each region housed a similar profile of clusters: Automobiles, Business Services, Electronics, Food & Agriculture, Forest Products, Mining/Materials, Textiles & Apparel, Tourism, and Transportation & Distribution. While substantial connections and complementarities were found within the clusters on either side of the border, there were nevertheless significant barriers to and untapped opportunities for business growth. For El Paso in particular, the analysis highlighted the importance of developing the high value-added components of the region's clusters (e.g. marketing, distribution, business services) to complement and serve Chihuahua. Through the creation of the Camino Real Economic Alliance (CREA) and other cross-border networks of public and private sector officials, the region is pursuing a variety of initiatives to support cluster growth by harnessing the combined assets—from transportation and power systems to cultural expertise—of economies on both sides of the border. Like Silicon Valley, Camino Real regional leaders have discovered significant business advantages from increasing regional collaboration and focusing on cluster development.

Dependent and narrow economies—

Link competencies to new markets

Regions such as South East Los Angeles County (SELAC), the State of California, Ventura County, California, East Tennessee, Monterey, California, and to a lesser degree St. Louis, Missouri, the state of Connecticut and Jacksonville, Florida have economies that have historically been heavily dependent on federal spending for national defense. Whether at military bases, national laboratories, or private defense contractor firms, defense-related jobs were part of the core of these regions' economies but have been disappearing with unprecedented speed as defense spending has declined with the end of the Cold War.

The challenge for these communities has been to redefine their special economic assets and leverage them to diversify the region's economic base. Cluster-based strategy helps these regions link their assets to cluster development opportunities within the surrounding region or other more distant metropolitan areas. Using cluster analysis techniques, places such as Ventura County and the Monterey Bay region have identified their assets, e.g. technological knowledge, scientific or engineering skills, specialized manufacturing or military base facilities. They then sought to match these assets to the industry strengths and market opportunities of clusters in the surrounding region. The Ventura effort for example first brought together representatives of 60 defense contractors and base laboratories to define their technical competencies in fields from logistics to remote sensing. The effort then introduced defense competency groups to representatives of regional clusters such as agribusiness, health services and environmental technology to define market opportunities and collaborative initiatives. As a result of such efforts, Ventura and other dependent economies have made progress in developing as suppliers to clusters with commercial rather than government-driven markets.

Some places have even succeeded in nurturing new industry clusters locally by focusing on emerging business activities in the region and re-orienting defense-related assets to support this emerging industry growth. South East Los Angeles County (SELAC) presents a case of a community hit hard by defense downsizing that is responding with a comprehensive plan to expand emerging business opportunities related to key clusters in the region. At the center of SELAC's plan is the Alameda Corridor, a recently begun project to build a high-speed, multimodal transportation corridor through SELAC connecting Los Angeles' ports to inland rail and trucking terminals. This project is intended to enhance Los Angeles' role as the premier U.S. trade and transportation center on the Pacific Rim. With significant defense facilities and contractors located in the 27 communities comprising SELAC, the region is focusing on linking facility reuse and business recruitment to development of the trade and transportation industry cluster. Additionally, the cluster-based approach has helped SELAC to view more broadly its economic assets in the context of the greater Los Angeles economy. For example, the strong presence of garment and apparel manufacturers in SELAC could benefit from strengthening ties to the design and marketing talents of the fashion and entertainment industries based in nearby Hollywood.

Rural and less developed economies—

Build network connections

Whether economic transition is driven by government policy changes or market forces, the challenges may appear even more daunting in regions where the industrial base is more limited. Such less developed economies, often in rural areas, may lack the concentrations of related industries necessary to build vibrant, self-sufficient local clusters. However, the logic of the cluster approach can be used to help these ar-

eas capture more business activity at higher ends of the value-chain in industries in which they currently have strength. For example, rural regions in California, Washington, Oregon and the Midwest which are concentrated in agricultural production, have expertise in agriculture and food industries that is being translated into opportunities to capture more value locally. They are doing this by moving into processing of agricultural commodities and production of related inputs such as chemical and industrial equipment and services. Rural areas are also beginning to develop specialized competencies in industries such as multimedia, software, engineering, and manufacturing of specialty products (e.g. furniture) to serve clusters whose principal businesses (buyers or intermediate producers) or marketing and distribution services are located in larger metropolitan centers. By becoming, in effect, satellite sources of value to another region's clusters, less developed economies can become strategic partners in the cluster value chain.

As telecommunications and commercial freight services improve around the country more regions with specialized business capabilities and economic infrastructure may find themselves as "nodes" or "centers of excellence" in what might be called "network-based clusters" of design, development and production, dispersed around a region. As these nodes grow, in some regions, they will generate and attract new sources of economic development that will help diversify their regional economy into both local serving businesses as well as new parts of distant cluster centers. Other narrow economic regions may remain less diversified and dependent on the geographic center of cluster activity they supply, subject to the cyclical upheavals of those more distant locations. Much of the Appalachian region has historically fallen into this latter category of vulnerability, with its isolated production facilities and less developed economic agglomerations. Without the diversity and value-adding activities of clusters many dependent or narrow economic regions will continue to face economic difficulties in adapting to market changes.

Disadvantaged communities—

Reach out to the metropolitan region

Disadvantaged communities, often in downtown urban areas, are characterized chiefly by their economic isolation as reflected in high rates of unemployment, poverty and business decline. In today's economy, the primary challenge of these communities is to build bridges between the community and economic opportunities in the broader metropolitan economy. The cluster framework serves these communities by mapping out key industries and economic infrastructure located throughout a region. Unlike some inner city economic development approaches that focus only on neighborhood self-sufficiency, cluster-based strategies help disadvantaged communities connect to growing economic opportunities elsewhere in the region. This is particularly important in today's economy where significant new business development in metropolitan areas is occurring in outer suburban areas. Cluster-based strategies seek to increase the income of inner city neighborhoods by building busi-

nesses to serve as specialized suppliers to strong clusters in the regional market. This strategic approach has been used in places like Detroit where inner city auto parts makers are building supplier relationships with Big Three assembly plants and creating new jobs in disadvantaged communities. A similar approach is being pursued in SELAC where the job training system is being reoriented to train residents of disadvantaged communities for jobs in the growing transportation, trade and distribution industries.

**Opportunity regions—Recognize early signs
and prepare for the future**

The fifth type of economic circumstances revealed by the initiatives studied for this report is “opportunity regions”—places that are doing well economically and are proactively preparing for the future. Austin, Texas’ cluster initiative described earlier is a prime example. While Austin was not experiencing any severe economic problems in 1984, it chose to aggressively grow high technology industry clusters and in so doing radically altered the face of the region. Opportunity regions may also be growth regions at later stages of development than Austin was when it launched its cluster-based strategy initiative. In these already rapidly growing regions, the cluster framework helps economic development leaders manage growth by thinking through emerging cluster trends and requirements, and the public and private investments necessary to develop these opportunities.

In Florida, a proactive economic plan was developed for the state through a cluster-based initiative started in 1988. At the time, after four decades of nearly uninterrupted population growth, Florida business and economic development officials had become concerned about the state’s dependence on income from retirees and others escaping cold climates. The state’s economy was generally healthy but had little independent wealth-generating activity. Therefore, the mission of the cluster initiative was to achieve a balanced and higher value-added economy. The key, officials realized, was to move beyond the state’s narrowly focused industrial attraction efforts to strengthen economic foundations for future growth. The result of the collaborative strategy process that followed was a set of initiatives to improve higher education, research and technology development capacity in the state.

**When is the cluster approach
right for you?**

How do economic development professionals and civic leaders know whether launching a cluster-based strategy initiative is the “right action” to take for the future of their economies?

The following diagnostic questions can help you determine if a cluster approach is right for you:

The right economic scale

- *Are you thinking regionally?* A metropolitan area or “commutershed” is the most appropriate geographic focus for a cluster initiative. Politically defined regions do not adequately reflect the economic geography of clusters.
- *Are you representing a small community?* If you represent a community rather than a metropolitan area, a cluster approach may not be appropriate for your situation. However, you can and should “hook up” with the nearest region in an economic partnership for cluster-development.
- *Are you a sub-region?* If you represent a group of communities within a larger economic region (e.g., South East Los Angeles within Greater Los Angeles) a cluster initiative can help you build your identity and position you to better connect to the surrounding regional economy.

The right economic challenge

- *Are you responding to economic restructuring?* Cluster strategies are suitable for helping regions adjust to economic transitions like defense downsizing. Even if you are responding to an immediate problem, such as a company or plant closure, a cluster strategy can help you mitigate impacts by matching and connecting skills, technology competencies, and facilities of the affected employers to the needs of regional clusters.
- *Are you thinking about improving the economic inputs used by different industries?* Cluster initiatives are designed to create more responsive sources of inputs for each cluster, such as training, technology, financing, physical and information infrastructure, regulatory policies and quality of life. However, cluster initiatives also define shared improvements and investments for the regional economy, building on similar cluster priorities.
- *Are you concerned with a specific project or investment?* If you are already involved in a specific project, such as an incubator, technology park, enterprise finance program or highway, a cluster-perspective can help make your projects more market-focused and link you to sponsors and users.

The right economic focus

- *Are you thinking about your region’s cluster “portfolio” and regional vision?* Cluster initiatives are typically valuable when you are concerned with each of the major industry groups that are the building blocks of your economy—whether mature or new. The goal is to improve the environment for key clusters and from this shape a vision of the region’s future.

- *Are you thinking about one industry?* Cluster initiatives are inclusive and reach beyond companies in one industry to encompass related industries who may use similar economic inputs, such as technology, skills, financing, transportation. Industry associations may be an important “seed” for growing a cluster initiative. A one cluster initiative is possible, but may miss the opportunity to develop common ground on economic issues with other clusters.
- *Are you thinking about one company?* If you are immediately concerned with retaining or recruiting a specific company, a cluster initiative may be too late to help you. However, a cluster initiative will provide a strong logic and focus for efforts to form, retain and expand, and attract companies in specific clusters.

The right leadership and strategy process

- *Do you have a tradition of leaders caring about the region’s economy?* Deciding to undertake a cluster initiative requires having one or more individuals with credibility and commitment serve as the catalyst, whether they are from the public or private sectors. Regions with a history of leadership have an easier time getting started while those without a tradition must work harder to educate and engage participants.
- *Is there an organization that can help bring stakeholders together?* Cluster initiatives need groups who are committed to getting the process started and, later, to overseeing implementation. Without an initial “home” a cluster initiative will have difficulty moving forward.
- *Are you ready to use an inclusive and collaborative change process to engage industry and institutions?* Cluster strategy depends on sponsors being willing to use a process that engages representatives of large and small companies and public and nonprofit institutions in a collaborative process that will define solutions for which participants will be, at least in part, responsible for helping to implement. An elite planning process cannot achieve cluster objectives of collaborative strategy. Readiness or willingness to explore change is essential.

The right capacity to take action

- *Is there a tradition of working with the surrounding or nearest metropolitan economy?* If there is not, efforts to learn about the interdependency of communities on their surrounding regional economies need to be undertaken.
- *Is there a tradition in the region of assessing and facing economic challenges?* If there is little tradition then more time and effort will need to be spent at the beginning of a project to educate and engage the community on such issues as cluster development and competitiveness and how to create regional competitive advantages.

- *Does the region have the technical capabilities and financial resources to undertake a sufficiently thorough diagnosis of economic structure and conditions?* Sound diagnosis is essential for a cluster initiative's credibility. If initial resources are insufficient then the process should be structured with explicit plans to seek additional resources at each stage.
- *What is the history of communication and cooperative action among public and private organizations in the region?* A region with a rich history of collaboration may be able to move quickly to consensus and action whereas other regions may need to spend more time developing ways for different groups and sectors to work together.
- *Is the region prepared to respond to challenges by changing or working in new ways?* If the region's leaders are not ready to take action then ways need to be found to increase their comfort level and to establish accountability.

Undertaking cluster-based initiatives will prove challenging to any region. Merely using the word "cluster" and actually completing a cluster-based strategy are not the same. Transforming strategy into action with measurable outcomes will challenge any region's "cluster thinking" and capability for "cluster action."

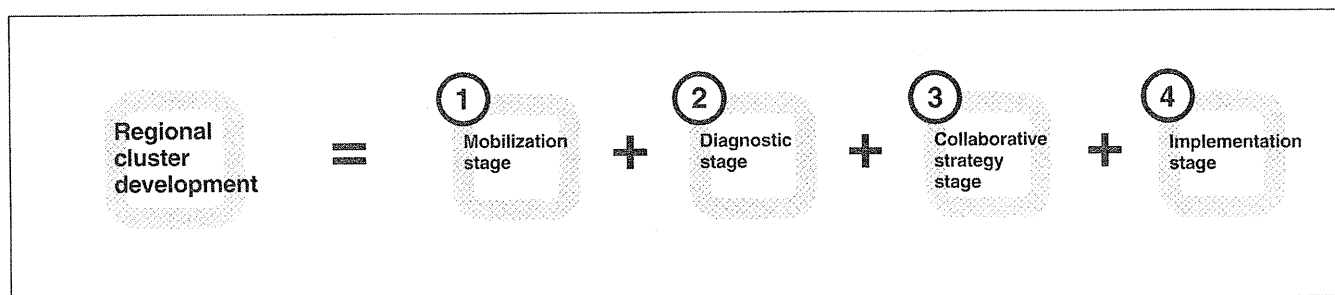
One of the most practical and critical features of the cluster-based approach is that it requires a continuous, integrated, public-private commitment for a region to implement a strategy that is truly market-driven, visionary, and high-value focused. Those regions that recognized that their cluster initiative was a developmental process were often able to sustain their momentum into implementation. Many learned that they needed to integrate sectors and maintain a continuous process only by trial and error. Some initiatives were stopped mid course by political changes or by lack of necessary leadership. Sustaining and connecting participants is both a burden and an essential feature of successful cluster efforts.

Chapter III

An overview of cluster-based economic development

The specific content and goals of cluster-based strategies may vary widely from region to region in order to respond to each region's unique economic circumstances. Indeed, such flexibility is a hallmark of the cluster-based approach and a key to its success. Yet, a review of the cluster-based economic development initiatives examined for this report does indicate that most regions follow a similar pattern in carrying out their initiatives. This pattern consists of four stages of activity. Regions may need more or less time to complete each stage and the stages may overlap each other. However, no stage can be entirely neglected if a region is to carry out a comprehensive cluster-based strategy.

Figure III-1 Cluster-driven regional economic development has four key stages



The four stages of cluster initiatives

Stage I: Mobilization

Widespread interest and participation are essential for a successful cluster initiative and this participation is best engaged at the earliest stage of activity. Economic development leaders must consider how to mobilize the different constituencies that will be needed to carry through the initiative. Constituencies range from senior executives of major businesses and industry associations in the region to government and university officials to the public audiences that might be funding the initiative with their tax dollars. In addition, economic development officials must keep in mind that many different constituents are needed for different roles. For example, some senior business executives must be recruited to take on time consuming leadership roles in the initiative, while other constituencies may be looked to for support of the process and activities that will follow.

Often there is an initial, external event that jolts a region's economy and begins to motivate action to shape a looming economic transition. The catalyzing event can be the loss of a major employer, a military base closure or cutbacks at other government operated facilities. In some cases there may be no catalyzing event but a growing recognition that the region's economy is being affected by not so obvious, but potentially more serious external forces such as tougher foreign competition for a local industry, fundamental market shifts affecting an entire sector, or rapidly changing technology that is affecting the competitiveness of the economy. External forces like these tend to emerge slowly and are noticed only when the economic impacts are felt. Particularly in these slowly evolving cases, economic development leaders may need to identify the emerging "crisis" to help put the region's economic challenges at the front and center of public attention.

Stage II: Diagnosis

Once there is a degree of participation and commitment on the part of stakeholders, a region should carry out a thorough assessment of the industry clusters that comprise its economy. Without adequate mobilization prior to this diagnostic stage, any analysis is likely to simply sit on a shelf collecting dust. Moreover, without thorough analysis, later stages of cluster development will be hampered by inadequate understanding of the region's assets and liabilities.

The diagnosis should involve collection of information about all the attributes of the region's clusters and economic infrastructure that will shed light on cluster development opportunities. For example, most regions want to grow the high value-added segments of clusters. Their cluster analysis should, therefore, include the measurement of wages, value-added and growth rates of the different industries and types of jobs that are contained within each cluster. The region may wish to examine projected growth rates as well. The level of detail and insight from the analysis will be a function of the availability of data, technical skills, and the quality of previous analyses. There are a number of things to consider in proceeding with the diagnosis stage including who should do the cluster analysis (e.g. a local university? an independent consulting firm?) and which analytic techniques to employ. In addition, the diagnosis should be structured to dovetail with the analytic needs and capacities of the cluster participants in the follow-on collaborative strategy stage.

Stage III: Collaborative strategy

Markets are where collaboration and exchange take place. The goal of cluster-based strategy is to convene the marketplace and enable collaborative solutions based on recognition of shared needs and negotiation of shared commitments. Convening the marketplace for economic development first involves identifying major demand-side stakeholders, who are the companies within regional industry clusters, and the major supply-side stakeholders, who are public and private supporting economic institutions, from universities and community colleges to utilities, financial institu-

tions and regulatory agencies. Once the participants have been identified they need to be brought together in a working group that will enable collaborative strategies to be developed. The quality of the collaborative process itself depends on the caliber of each group's leadership and how well each group's participants represent their cluster. A regional cluster initiative may focus on one or two clusters or many more. Each cluster needs a cluster-working group involving as few as 10 participants and as many as 35 to 50. Each group will use diagnostic data and individual experience to define competitive challenges, prioritize those challenges and develop action initiatives to address shared problems, such as training, research or financing. These action initiatives are carried out by both businesses using their resources as well as by public organizations. Private sector firms may use their own resources to fund initiatives or create new organizations. Schools, universities, and training institutions have the mission of educating and training residents, but will not know the education and training requirements of the private sector unless there are effective channels for communication and cooperation. Similarly, port, telecommunications and power infrastructure developers and financing institutions need to understand and respond to changing market requirements, but they can only do so through close collaboration with their private sector "clients." Through the collaborative process public institutions, such as schools or regulatory agencies, may agree to change their operating practices as well as create new programs in response to cluster needs. The actual initiatives may be led by business or public participants.

As cluster-specific initiatives are developed, regional leaders begin to identify common themes for cross-cutting action. At the regional level collaboration focuses principally on larger scale initiatives involving reform or improvement in existing institutions, such as university or lab research commercialization permitting systems, school-to-work programs, enterprise financing, or telecommunications infrastructure development. The combination of the cluster-specific initiatives and cross-cluster or shared regional directions often become the basis for a regional vision and overall economic strategy.

Stage IV: Implementation

The goal of a cluster-based initiative is to enable positive changes in a region's economy. Usually this is achieved through implementation of specific actions developed through the collaborative process that enhance the growth and competitiveness of clusters. Implementation may involve businesses forming new relationships with each other and suppliers to conduct research, improve productivity of engineering or manufacturing, organize training in key skill areas, meet specialized financing or undertake joint marketing. Implementation may also focus on development or improvement of the quality of regionally supplied inputs used by one or more clusters in the region, such as the physical, environmental, communications, research, training or regulatory infrastructure already provided by public and private institutions.

Yet, implementation of action—especially action that is sustained—is not an automatic outcome of an analysis and collaborative strategy process. Economic development leaders managing a cluster strategy process should have a strong “bias for action” in every aspect of their initiative from the very start. Beyond effectively managing cluster working groups so that their participants do not simply propose recommendations for cluster initiatives, there is a need for management of the overall process of implementation. Many regions have designated or created a single organization to implement the projects recommended in the collaborative strategy stage. Other regions may use a mixture of individual public, private and non-profit groups to achieve mobilization, diagnosis, collaborative strategy, and follow through with actions.

**A growing body of
cluster-based experience:
Primary lessons learned**

Although the practice of cluster-based economic development is evolving, there is a growing body of experience from which lessons can be drawn about how to develop and carry out a winning strategy. Most of the lessons apply to specific stages of the cluster-based approach and are discussed in following chapters. However, there are a few important lessons that emerge repeatedly and should be kept in mind by economic development leaders as they move through all stages of the cluster development process.

1. Recruit highly committed leadership

At the heart of the success of most of the effective cluster-based initiatives examined for this report were highly committed civic leaders. Often referred to as initiative “champions,” leaders can come from any source—government, business, universities, institutes, associations. Leadership needs and leaders may also change from one stage to the next of an initiative. Indeed, different types of leadership skills and styles are required at different points in the cluster strategy process. For example, a charismatic public figure may be most effective at mobilizing a community, a well organized manager may be best suited to leading the diagnosis process, a recognized statesperson may be required to motivate participation in collaborative strategy and a dedicated stakeholder may be essential to overseeing implementation. Regardless, it is essential to recruit energetic civic leaders who can inspire the commitment and participation of others.

There is almost always a need to identify private and public sector leaders who have clout in the region and who can commit the time and energy to marshal both people and financial resources throughout each stage and keep them focused on a steady, systematic process aimed at strengthening the region’s clusters and making the region more economically competitive. In some cases, a single “civic entrepreneur” will emerge as the “sparkplug” for the overall strategy initiative. In other cases the process will be slower, with a group of concerned stakeholders moving to action implementation as they learn by doing. While the state or a local governmental entity

may catalyze the start of a cluster initiative, it is far more common that the spark that moves initiatives forward comes from the private sector alone or in partnership with government.

The history of collaboration and the range of leader types and approaches currently in place will determine, in large part, the type of collaborative action likely to be successful in a region. In particular, the regional industrial composition can make a difference in the availability and kind of leadership resources. For example, regions with large headquarters companies such as New York or Silicon Valley will have more resources for regional leadership as compared to communities with small company headquarters or mostly branch operations (e.g. Phoenix). Regions such as Arizona that have many entrepreneurs in emerging industries also provide a source of activism and commitment to collaborative economic strategies. Although Austin did not have headquarters companies, the region was able to leverage its other leadership resources, e.g., the presence of the state capitol and the many institutions such as the University of Texas and the Chamber of Commerce. Austin's high-tech strategy was spearheaded by a successful leadership team composed of representatives of the Governor's office, the University of Texas, and the Chamber of Commerce. Whatever the structure of a region's leadership at the start of a cluster-based initiative, the inclusiveness of the process will result in discovery and development of new leaders from large or small firms and public or nonprofit institutions of all kinds who will see cluster working groups as a new means of energizing economic action.

2. Have a strategy to ensure adequate resources throughout the process

Adequate time, energy, and financial resources must be identified for every stage of a cluster-based initiative. Cluster initiatives have failed, or come up short of their objectives, more often because of undercommitment of resources (including leadership) than for any other reason. Securing leadership resources may call for tapping several sources including chambers of commerce, organizations of major employers, trade associations, groups representing retired professionals, academic institutions and government. Securing financial resources may call for tapping private firms for donations or loaned executives, public organizations, and non-profit foundations for grants. Most likely, commitments will be required from several sources (public, private, and the non-profit sector). The main point, however, is that leadership and financial resources must be identified well in advance of the initiative and commitments secured before moving from one stage to the next. Furthermore, as actual resource requirements are typically greater than originally expected the planning for such contingencies is essential.

The cost of not planning ahead can be high. After eight working groups of committed regional cluster leaders in East Tennessee spent many hours developing a set of initiative recommendations, the region did not have the financial resources to implement many action initiatives. This resulted in diminished credibility of the

sponsoring organizations. Although the East Tennessee project accomplished much, some observers would say that it did not accomplish nearly all that it could have if resources were available to support a full implementation phase. In Jacksonville another kind of resource shortcoming affected the project. Both the key volunteer initiative leader and his counterpart at the sponsoring organization (the chamber of commerce) had to ease out of the project at the critical “hand-off” point between the completion of the diagnostic report and the launch of the collaborative strategy development phase. Some observers in the region feel that the loss of leadership momentum at this critical point caused the project to come up far short of its potential.

3. Choose the right geographic level of focus—Regions vs. cities and states

One apparent lesson from the initiatives examined is that cluster strategy initiatives are more effective at the regional, rather than at the statewide level. This is likely because, for the most part, the economic linkages of industry clusters are regional by definition. With a regional focus, it is far more likely that the mobilization and collaboration stages will be effective because potential participants are more likely to know the initiative leaders personally and because physical proximity makes working together easier. In most cases, the initiative champion was a charismatic private sector or academic leader with regional stature and clout. There are notable exceptions such as the cases of Arizona and Florida where individuals with statewide clout emerged as the initiative champions.

Statewide and subregional efforts do serve useful purposes, however. Where statewide efforts can be effective is when their purpose is to focus on catalyzing and supporting regional economic strategies. A good example is the Florida Cornerstone initiative. Designed and implemented at the outset as a statewide effort, the leaders of this project soon found that their success was to be found in several regional initiatives that were launched by local leaders to push the state effort to the regional level. The chambers of commerce of Tampa, West Palm Beach and Jacksonville all independently launched local cluster initiatives designed to dovetail with the statewide program.

In Arizona, the statewide effort evolved in several ways including the development of region-specific, cluster-specific initiatives. The Tucson Optics cluster initiative is one of the best examples of a regional, industry-led, government supported cluster effort. The initiative is now several years old and continues to thrive, paying significant dividends to cluster firms and institutions. Overall, the cases suggest that an effective division of responsibility between state and local players would have the state playing an important role in mobilization (e.g., where the Governor convenes key regional leaders and charges them with action) and in the diagnostic stage (e.g., by having public university or state economic research units contribute to analyses).

At the collaborative strategy stage local private and public organizations and their leaders are in a better position to bring their region's industries together and are

more likely to produce concrete results because of their closer access to key implementing organizations (e.g., community colleges, banks, local government). However, the state government and its entire set of executive departments and agencies should view themselves as important participants in the collaborative strategy and implementation stages of cluster initiatives—as suppliers of economic inputs to their state’s marketplace. Along with other local agencies the state should participate in cluster initiatives with the intention of seeking new ways to enhance the economic advantages provided by state inputs to each cluster and the overall region. These may be enhancements of the state (and local) basic and higher education system as well as changes of its physical infrastructure investment, social and regulatory policies.

4. Find tools to sustain momentum between stages

In most cases, the energy level of leaders and participants in cluster-based projects began to wane after six to twelve months of activity. Yet, at least this much time is usually needed to generate a collaborative plan of cluster-focused and cross-cutting economic action—if a region begins with mobilization and proceeds through diagnosis and collaborative strategy to the implementation point. Loss of momentum can be the death knell for any cluster initiative. Economic development leaders therefore need to develop ways of keeping participants’ energy and interest levels high throughout all four stages. This requires demonstrating that progress is being made and providing concrete ways for people to be involved. For example, “participatory diagnostic” reports whereby economic analysis is supplemented with expert opinion drawn from industry can keep industry representatives in touch and interested in the project rather than allowing the entire diagnosis to be completed by university researchers or consultants behind closed doors.

A strategy for continuous media involvement can be an effective way to sustain momentum. East Tennessee’s initiative leaders persuaded the local press to publish an on-going series of articles, some focusing on the overall effort and others on each cluster. This media coverage helped keep interest high throughout the process. High profile events can also generate and sustain interest in a project at key turning points. For example, during the development of Joint Venture: Silicon Valley initial sponsors held a large public meeting to introduce their diagnostic report to the community. They held a similar meeting to announce the implementation plans. Both were well-covered by the local media. From this coverage the general public as well as the early participants in the process saw that what was happening was being viewed by the media as important to the future of the economy. “Actionable” findings in a diagnostic report can provide early focal points around which to excite leaders for the collaborative stage.

The CALSTART project undertaken by the state of California to develop advanced transportation industry clusters, excited participants early on with a set of findings that showed leaders and participants where and how to take specific actions. The

CALSTART findings made the case that if no action were taken, a problem for which a ready solution existed (e.g., electric and hybrid power vehicles based on new applications of existing technologies) would be unreasonably ignored. Detailed action plans for each initiative at the end of the collaborative stage are also important in order to lay the groundwork for implementation. Such plans can include details about the problem, the solution, the allies that must be mobilized for a solution to be found, the workplan, the budget and important milestones to gauge progress. Rigorous, but realistic plans like these signal the participants that there is a path forward and thus a reason to stick with the initiative and see it through to ultimate success.

5. Engage potential implementing institutions from the earliest stages of the process

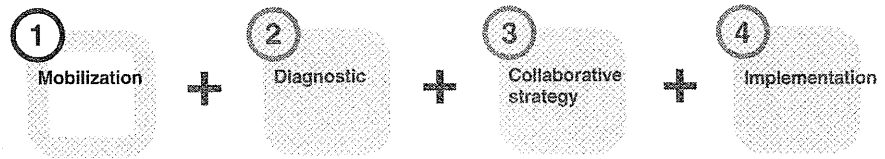
The ultimate success of a cluster-based development initiative is determined by whether members of a region take specific actions to implement strategies for economic change. These actions may range from the establishment of producer-supplier alliances to the construction of needed communications infrastructure. Case studies show that action is more likely to take place if responsibility for implementation is assigned to and accepted by an organization whose mission and resources closely align with the objectives of the action initiative.

Implementation of specific cluster action initiatives following the collaborative strategy stage can require considerable time and financial resources. In many cases, the leaders and financing needed are found within large organizations. These organizations may be committed because a representative participated in the collaborative strategy process (the best case), or because the leader has been convinced to support implementation by cluster stakeholders or by a respected regional leadership group. Sound cluster action initiatives that are assigned to well-meaning, but poorly resourced organizations, such as enthusiastic cluster working groups or individuals may fail at implementation. If possible, responsibility for implementation should be assigned to individuals with the resource capacity to move the idea ahead. This means that individuals who are in the best position to move likely initiatives forward need to be as much a part of the collaborative strategy process as possible from the outset. Consider, for example, a cluster project that leads to an action plan to establish new workforce training initiatives (a frequent outcome). Community colleges are often the appropriate institutions to spearhead such training initiatives. It would therefore make sense to have engaged regional community college presidents early in the cluster strategy process and particularly in working groups from which ideas for training initiatives are likely to emerge. While a college president may not come up with a particular idea, if it comes out of a group or process in which (s)he has been a part, (s)he is more likely to accept the role of an initiative champion with the authority to drive the initiative toward implementation. The desired outcomes from cluster strategy are not recommendations, but action plans developed and negotiated by those demanding a particular action and those supplying the resources to make it

happen. The desired outcome from a cluster development initiative, overall, is action that improves cluster performance and enhances regional development.

Chapter IV

Stage One: Mobilization



Cluster-based economic development is not simply a project involving data collection, analysis, and planning, but is instead about mobilizing leaders and institutions in the regional “marketplaces” to act in new and more productive ways. Mobilizing economic stakeholders to perceive their job in terms of the region’s marketplace of companies and institutions is a major challenge. Taking stakeholders who are linked together by common needs, shared vision, and commitment to value-added outcomes is essential. Achieving action outcomes begins with mobilization.

Finding the “right” answer to the questions of who leads initiatives and who supports, is closely linked to ultimate success. As a practical matter someone needs to take responsibility for starting action. Since most regions face an array of economic development problems that do not fit into anyone’s job description (e.g., declining competitiveness, shifting markets), non-traditional sources of leadership must often be identified.

Mobilizing for market and institutional innovation sometimes requires educating stakeholders about their economic challenges and opportunities to partner with important members of the regional economic marketplace. Planning projects may illuminate a problem and provide professional insights concerning solutions. However, planning may not lead anyone to take responsibility for turning good ideas into realistic actions and then putting them into effect. While building regional or local capacity to think actively about economic change can prepare people to take more responsibility for action, very often leaders and supporters will need to be encouraged to become “stewards” of collaborative action. See Exhibit IV-1.

Key lessons for mobilization

Lesson M1:

Use economic challenges as windows of opportunity to bring stakeholders together

Economic change often happens in slow and subtle ways making it difficult to convince people that there is a need for action. Yet without purposeful action, negative

economic forces can not easily be overcome. Economic development leaders, therefore, need to find ways to wake up business, government and institutional leaders and induce them to participate in a new collaborative initiative. However, each region has different configurations of business organizations and institutions that can participate in the mobilization stage. These regional leadership resources are likely to respond to economic challenges in different ways (Exhibit IV-2). This may necessitate presenting challenges to prospective leaders in ways that address to their organization's priorities or politics.

Nearly all the participants in cluster-based initiatives examined viewed their region's economic conditions as in (or nearing) a state of crisis that required mobilization of the community. Sometimes leaders created visibility by focusing on a singular event, such as a plant or military base shutdown, to draw public attention to broader, longer-term issues of economic transition. Leaders in the El Paso, Texas region were spurred to action by the passage of NAFTA, a new trade agreement that promised to dramatically affect the region's competitive position. In other places, such as recession-

Exhibit IV-1 Stage 1 Mobilization Checklist

Objective: Develop a leadership group (working with sponsors) committed to overseeing and participating in the cluster-based economic development initiative.

- Does the regional culture facilitate collaborative problem-solving?
- Do civic leaders concerned about the region's economy recognize the need for collective action to confront today's economic challenges?
- Does the region have a history of "working together" on regional problems?
- How developed are the region's leadership resources?
- Can the region's economic challenges be discussed in ways that will elicit the concern and involvement of others?
- Which specific regional stakeholders can catalyze action? Do they agree with the need for collaborative action?
- Can a leadership or "stewards" group be built?
- Are the leaders and other participants representative of the principal businesses and institutions in the region?
- Can the goals be defined to engage key participants?
- Are participants motivated by self-interest to work for region-wide interests?
- Is there broad and "visible" buy-in to both the challenges and the goals?
- Is there commitment to move forward by leaders "with clout"?
- What resources are necessary to support the cluster effort? Are they available?

Exhibit IV-2 What type of leadership resources can your region mobilize?

Headquarters regions: Presence of corporate executives, their public affairs and government relations offices, administrative as well as R&D centers, encourages involvement in broad regional issues linked to corporate citizenship image, issues threatening the company's situation (e.g., downsizing, skill, supply, transportation), matters in which headquarters have management expertise (e.g., education, finance), and situations in which participation in the cluster process may result in the enhancement of corporate operations (e.g., tax base, development costs).

Established branch offices or plants regions: Less autonomy to use resources and commit time to issues not aligned with corporate priorities, but branches have capacity to focus on issues that improve operational productivity (e.g., training, physical infrastructure, communications).

New or "greenfield" regions: Where new facilities are involved executives from HQ and plant management work closely with regional leaders on many economic issues from education and training to supplier development and transportation to ensure a competitive starting basis for operations.

Entrepreneurial regions: In regions with rapidly growing clusters of firms in their early stage there is higher likelihood of leaders becoming involved with issues important to that sector and for these leaders to attract attention and interest of public leaders concerned with fostering their development (e.g., multimedia, biotechnology, optics, etc.), whether on R&D, financing, training, permitting or communications.

State capital regions: While not always the largest economic center, state capitals may have the attention of state leaders who may be concerned with the capital's visibility and bring political clout to focus on flagship efforts that might be models for the state and their home districts.

Urban centers: Historically urban centers have access to leadership from established institutions, including corporate headquarters, universities, banks and utilities. When urban centers decline, securing participation of leaders becomes more difficult, particularly if outmigration has occurred. In contrast, rural centers face a paucity of institutions and must reach out further to regional allies to build leadership resources for development.

Institution-rich regions: Regions with a high concentration of major universities, research institutions, utilities and government agencies often can be mobilized around issues concerning challenges to their own survival and development when linked to the economy. Major power and communications utilities, banks, transportation agencies, universities and health systems all have a stake in how the regional economy performs, since their clients are the region's economic base.

stricken South East Los Angeles County (SELAC) and Southwestern Pennsylvania, motivation to mobilize came from a sense by public and private leaders that economic conditions in the region had hit bottom. Economic development leaders need to mobilize quickly using the sense of challenge that a crisis can generate.

Lesson M2:

Kick-start mobilization by creating or identifying an organization dedicated to the initiative's goals

Many cluster-based initiatives have found it useful to form an organization early on to help guide and manage the effort. Referred to as “stewards groups,” such organizations serve as a conveyor and “bridge” between participants. Their role may change and grow over time to serve later implementation objectives. Nevertheless, most regions find it important to have a single organization explicitly dedicated to the initiative's goals. This organization can take many forms. It may be formal, such as the Tennessee Resource Valley in East Tennessee which has a board of directors, budget and staff, or informal, such as the Camino Real Economic Alliance which is a network with only a secretariat office housed within the El Paso Chamber of Commerce. The managing organization of the initiative may be a completely new entity, or an existing organization whose mission is adaptable. The form of the organization should be determined both by an understanding of existing resources and political and economic alliances in the region, and by the needs of the initiative to marshal a broad group of stakeholders. In creating new organizations, those responsible for mobilization need to identify an appropriate array of key public and private sector leaders who should be involved as well as an appropriate organizational model to ensure broad participation. (Exhibit IV-3).

The following cluster initiatives offer different approaches to forming stewards groups:

East Tennessee 21st Century Jobs Initiative: In the early 1990s, the U.S. Department of Energy (DOE) began the process of downsizing the Oak Ridge National Laboratory (ORNL) located in rural East Tennessee. With the lab being one of few major employers in the region, the proposed downsizing would clearly have major economic impacts on the entire region, not just the immediate Oak Ridge area. Impetus to launch a regional economic strategy came from a major DOE contractor with funding from DOE headquarters. An existing regional marketing organization, the Tennessee Resource Valley (TRV), was selected as the managing organization for the project. As a regional group with representation from across the 15 counties making up the region, TRV was considered more capable of introducing and sponsoring new approaches to economic development in the region than several alternative groups that more narrowly represented the immediate Oak Ridge area.

Arizona ASPED initiative: The cluster initiative undertaken in Arizona began with the formation of a group of private sector entrepreneurs called Enterprise Network. This group envisioned using a new economic approach to shift the state toward an “innovation-driven economy.” In 1990, Enterprise Network brought together the state Department of Commerce, the Arizona Economic Council, the Greater Phoenix Council, and the Greater Tucson Economic Council to commit funding to the effort. This public-private partnership was called Arizona Strategic Planning for Economic Development (ASPED). ASPED led the statewide cluster strategy initiative until it was mature enough to transition to a public sector organization, the Governor’s Strategic Partnership for Economic Development (GSPED), which then carried on the same mission for several years.

Exhibit IV–3 Building stewards groups

Stewards groups can take many forms:

- Existing economic development organizations: Chambers of Commerce, regional economic development councils, e.g., East Tennessee Resource Valley (TRV).
- Formal associations: Organizations specifically established to oversee cluster efforts, e.g., Joint Venture: Silicon Valley (JVS).
- Networks or alliances: Partnerships or umbrella organizations of existing institutions, e.g., Arizona Strategic Planning for Economic Development, (ASPED).

Criteria to consider when forming stewards groups:

- Presence of a suitable organization with an interest in taking on new mission and with a potential benefit to its current mission (TRV).
- The number of existing institutional resources in the region: The large number of economic development groups already in region will lend itself to building an association or network (ASPED).
- Availability of financial resources can determine whether a region should create a new entity or innovate with existing capacities.
- Characteristics of initiative: “New” mission such as nurturing an advanced transportation industry will require new entities (Project California and California Strategy for Advanced Research on Transportation [CALSTART]). Size of “region”—city, multi-county, state, multi-state, cross border, cross-jurisdiction—affects options for stewardship.

Joint Venture Silicon Valley (JVSV): When business leaders in Silicon Valley began to consider launching a new economic initiative they recognized the importance of bringing together a broad range of key stakeholders from across different industry sectors and the region's nine political jurisdictions. To do so they decided to form a new coalition-based organization. JVSV was designed to avoid the conflicts of interest or biases of existing organizations such as chambers of commerce, industry associations, development corporations and administrative jurisdictions, while being inclusive of all these stakeholder groups. The CEO of the region's largest semiconductor equipment company convened senior executives from influential companies to form a CEO Advisory Board for JVSV. JVSV became the main organization to spearhead the cluster strategy effort through the mobilization, diagnosis, collaborative strategy, and implementation stages.

Lesson M3:

Cultivate broad private and public sector participation and early "buy-in"

Starting cluster development is fundamentally about mobilizing private and public sector stakeholders to address regional economic challenges in new ways. Most initiatives examined show the importance of getting a broad selection of key stakeholders actually participating in the effort early on. This not only brings a wide variety of perspectives and resources from the marketplace to the planning process, it also helps assure buy-in to the process and, later, responsibility for implementing outcomes. But, saying that broad buy-in is important and accomplishing it can be two very different things. Such buy-in is usually critical to actually implementing the plans that are developed by participants. A well structured cluster initiative begins by bringing together leadership representatives of the economic output side of the economy together with representatives of the institutions that provide the region's economic infrastructure (Exhibit I-4).

Institutions and organizations that are intermediaries for the output and input sides of the economy, such as chambers of commerce, economic development agencies or utilities, may often be sponsors or conveyors of cluster efforts, but they cannot do the actual work of the cluster development process alone. Participants from the marketplace should always be the focus for cluster initiatives. At the mobilization stage the challenge is to secure participation from interested and influential businesses and institutions. Unless the start of the cluster development effort includes broad industry groups that represent the marketplace, the process of carrying out the diagnosis, developing collaborative strategies that consist of feasible actions will not easily occur. Mobilization is, at its core, about convening representatives of the regional marketplace to oversee a developmental process. The balance of the cluster development process focuses on building and managing the participatory mechanisms that carry this process forward. Exhibit IV-5 describes some of the ways that regions have gone about achieving broad participation.

Exhibit IV-4 Typical stakeholders in regional marketplace

Economic output representatives	Economic input representatives
Industry producers • Corporate headquarters • Company regional offices • Plants and branch facilities • Suppliers • Entrepreneurs Industry intermediaries • Chamber of Commerce • Supplier networks • Industry associations • Employer associations	Economic infrastructure providers • Research institutions and laboratories • Universities and colleges • Financial institutions (banks, insurance) • Power, water and waste utilities • Transportation providers/facilities (air, rail, port districts) • Telecommunications systems (wire/wireless) • Health care systems and social service providers • Real estate and construction • Regulatory agencies Economic infrastructure intermediaries • Elected officials and representatives • Public agency managers • Regional planning agencies, councils of government • Citizen non-profit groups • Development corporations • Labor and at-risk workers

Lesson M4:

Cultivate responsible stakeholders and “champions”

One key to implementation success in many regions is the identification (both during the mobilization and the collaborative strategy stages) of one or more “champions”—strong leaders who agree to take responsibility for moving the initiative forward. At different stages champions are needed to articulate the vision of the project, galvanize support, and motivate others to participate. While the case study research has found champions to have emerged from both the public and private sectors, with notable exceptions, it appears to be the senior level and committed private sector leader, e.g., a CEO of a major employer, who has the clout and resources to drive the complex actions of the cluster initiative to successful implementation.

Different types of leadership styles are most appropriate at different stages of the process. Economic development leaders should keep the following types in mind when recruiting champions to become involved:

Catalysts: Leaders who are outspoken advocates for a specific challenge facing the region in which they have an interest and usually personal as well as corporate motivation. In Arizona, the ASPED initiative was designed, promoted and launched by the

founder and vice chairman of a computer hardware and software company. This business leader was a visionary who has proved to be an effective catalyst for cluster-based economic development, not only in his home state but also through his travels across the country. He had the ability to articulate to business people and government leaders alike the value of focusing on competitiveness by achieving the productivity and synergistic benefits associated with industry clusters.

Caretakers: Leaders who are strongly committed participants, contributing to an initiative as good corporate or community citizens. The director of East Tennessee's 21st Century Jobs Initiative was new to the job at Tennessee Resource Valley when the region's cluster initiative was launched. However, he was experienced in the field of economic development, having served in executive roles in both state government and regional bodies. For the 21st Century Jobs Initiative, he challenged the project leaders and outside consultants to "touch all the bases" in the region, to keep the project manageable in scope, and to be practical with their recommendations. This caretaker's approach ensured that all parties received regular briefings on the project and that several of the priority flagship initiatives were implemented.

Technicians: Leaders who agree to be responsible because of their institution's knowledge and expertise in a given subject. The principal executive driving the day-to-day activities of Florida's Cornerstone Initiative was an example of this type of technical leadership. Now a consultant in cluster-based economic development, the former director kept an eye on the technical and analytic aspects of the entire project. His deep knowledge of both the state's economy and the strengths and weaknesses of its major education and technology institutions enhanced the quality of the diagnosis of the state's economy and its potential for change.

Consumers: Leaders who have strong interest in how the activities of the project will affect their institution, company or association. In Silicon Valley the CEO of one of the nation's largest semiconductor equipment companies helped initiate the entire cluster strategy process because he saw that conditions in the region were making it increasingly difficult for his company to remain competitive. JVS was formed, in part, as a reaction to the location in Austin rather than Silicon Valley of this company's new facility.

Managers: Leaders who are known for their ability to manage and steer group processes and maintain coherence. The President of the El Paso Chamber of Commerce managed that community's Agenda 21 initiative. This Chamber President had a manager's focus on objectives, milestones, schedules, deliverables and budgets. Agenda 21 was eventually linked to a similar project in the state of Chihuahua, Mexico by the Chamber President who saw the similarity in approaches and the potential for cross-border action initiatives to foster the region's economic development.

Exhibit IV-5 Case studies on the importance of early and broad participation

*Oregon Key Industries
Development initiative:*

Oregon's cluster-based strategy initiative is an example of "bottoms-up" problem identification. Partly in order to assure buy-in, and partly to ensure that the problem statement was sound, leaders of this initiative worked with industry members at the early mobilization stage to determine what they needed to be competitive and to grow. Governor Neil Goldschmidt worked with the legislature and public and private leaders across Oregon during 1988-89 to develop a statewide strategic plan for economic growth and development known as Oregon Shines. Private sector leaders from the various key industries became increasingly involved as the Key Industries Development effort started to be implemented. Oregon's Economic Development Department continues to work directly with Oregon key industry groups to organize and implement industry plans, industry development projects, and flexible networks in which firms cooperate to penetrate new markets.

*South East Los Angeles
Gateway Cities initiative*

South East Los Angeles is a region with few corporate headquarters and a history of conflict among its 27 small cities. By working through a cluster-based economic development approach, the region gradually overcame historical problems of fragmentation and factionalism by involving its mayors, city managers and development managers. Meeting together repeatedly in facilitated sessions to identify and define common ground and win-win outcomes they created a new network to move regional initiatives forward. Implementation was a function of a small team of collaborating city managers and economic development professionals. These leaders supported individual action initiatives in their respective cities and brought private sector stakeholders into the implementation process.

UC MBEST Center initiative

This university-led initiative was hindered at the outset because, as a less developed region, it had limited private sector stakeholders from the region and therefore less private sector "buy-in" to support cluster development at the point that the strategy were made public. The UC MBEST Center initiative was led by a non-profit institution (the University of California) with informal, arm's-length participation by city and county representatives and regional institutions. More success may have been realized with broader and earlier industry and institutional participation.

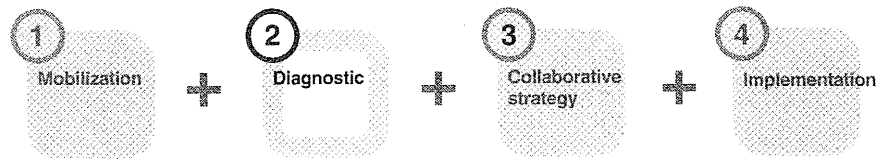
*East Tennessee 21st Century
Jobs Initiative*

Some leaders of this initiative feel that insufficient private sector commitment at the outset constrained implementation. In part, because the original DOE funding did not require non-federal matching funds from local organizations, they had no financial stake in the efforts outcome. The East Tennessee initiative failed to secure the level of private sector commitment needed to propel the outcomes of the effort into full implementation. Further, the initiative did not maintain the interest of key decision-makers at the Oak Ridge Complex which contributed to a lack of progress on actions where their involvement would have made a significant impact, e.g., new approaches to technology transfer.

Mediators: Leaders whose sound judgment and neutrality makes them capable of facilitating complex issues facing industries and institutions. A Vice President at the key sponsoring company in Silicon Valley was active in all stages of the JVSV initiative. His involvement was especially instrumental in the diagnostic and collaborative strategy stages where his ability to work with senior leaders from both the public and private sector strengthened the initiative's leadership capacity. He was able to mediate among different points of view and opinion, facilitating the transition to the implementation stage. He faced an array of complex problems during implementation, but was able to successfully structure an effective implementation plan by finding appropriate roles for key players.

Chapter V

Stage Two: Diagnosis



The second stage of cluster development shared in common among cluster initiatives across the US is that of diagnostic assessment. The objective is to use data collection and analysis in order to understand at a relatively high level of detail how an economy works (its structure), how it is performing (historically and relative to competitors), the region's sources of advantage (e.g., technology, skills, infrastructure, quality of life) and the threats and opportunities on the horizon. Once leadership in the region has been mobilized around a cluster-related economic development issue (such as downsizing, base closures, or growth opportunities), the various stakeholders need to develop insights into the challenges facing the region's economy as well as an understanding of the ability of the region to respond to the stakeholders needs.

Understanding the region's economic portfolio

Strategies and actions for regional economic development can be informed by a broader logic than "what we need is more aggressive industrial recruitment." Analysis of the variety, specific structure, and relative competitiveness of the region's industry clusters tells leaders how sustainable their economy is (i.e., are there diverse types of clusters? is activity spread out broadly among different industries within clusters?), the opportunities the economy is producing (i.e., jobs and wages), and whether the region is innovating new kinds of economic activity (i.e., expanding in new or high growth markets). An analytically sound diagnosis of a region's economic portfolio is the key to accurately defining specific industry challenges.

To carry out the diagnosis, regions often contract with a specialized analyst. In some cases a local university economics group can provide the analytical skills needed. In other cases, analytical capacity may not be readily available and outside consulting resources will be needed. The extent of the analysis needed will be determined by the nature of the economic problems facing the region and the availability of prior studies. A comprehensive assessment of a region's markets and ability to compete in those markets may be needed where there is evidence the region has lost market share in key industries. Alternatively, when answers to the market challenge and local capacity questions are relatively clear, the diagnosis can be more specific and focus on enhancing existing cluster-supporting activities. See Exhibit V-1.

Objective: Identify the region's "cluster" structure and competitive position, and understand the prognosis and challenges.

1 How is the regional economy performing?

- How have employment levels, per capita income, and gross regional product changed over the past decade?
- What are the regional trends in industry-specific employment, output and growth of new firms?
- What are the "baseline" projections for future economic performance, if no action is taken?

2 What is the condition of the region's cluster portfolio?"

- What definition of "cluster" is useful for carrying out a diagnosis of the regional economy?
- What is the region's capacity for analyzing cluster-based trends? Where does "practical" expertise reside?
- What are the region's industry-clusters and what are their current levels, concentration and growth of employment and output?
- Which clusters are the largest employers in the region, historically? How do they compare in size to other regions?
- What share of total employment and output do the largest regional clusters represent? Are the largest clusters concentrated in a few firms or widely dispersed?
- How is activity within each cluster distributed along the "value chain," i.e., are there many product and supplier firms, are there many different types of industries within the cluster? How vertically and horizontally integrated is the cluster? Where are the "gaps"?
- Which clusters are growing faster? Are business "buyer-supplier networks" forming?
- What are the region's emerging industries and clusters?
- How does the performance of the region's clusters compare to similar clusters in other regions, the nation, and worldwide?
- What is the outlook for each cluster's performance for the next five years? Is it feasible to expand any of the region's clusters?
- What are the strategic challenges facing each cluster according to business leaders, market analysts, public officials, etc.?

3 What economic advantages does the region provide to its clusters?

- Who are the region's providers of economic infrastructure, i.e., public and private sources of technology systems, human resources development, financing, physical infrastructure, information infrastructure, quality of life, and tax and regulatory systems?
- Will the diagnosis address the broad range of providers, or a few providers in a few categories?
- What is the current capacity and growth potential of the "economic foundation" providers?
- Are industry representatives satisfied with the quality and quantity of resources available?
- What are the comparative strengths and weaknesses of the region's economic foundations benchmarked against other competing regions?
- For problem areas, what are the practical constraints of and priorities for providing any specific type of supporting economic infrastructure?

Recognizing regional capacities

The economic performance of a region's clusters is determined by two factors. The first—external market demand for the goods and services of the region—is not easily affected by local action. The second—the advantages firms can get from within the region—is very much under the control of regional groups. For this reason, analysis of the region's economic infrastructure is needed to identify where there are strengths and weaknesses in the capacity to respond to overall and industry-cluster-specific needs. Thorough analysis of regional capacities, including comparison with "competitor" regions, involves the examination of the following systems: education and workforce development, technology development, financing, infrastructure, communications, business regulation, and quality of life.

The diagnosis stage concludes with a statement of the overall performance of the regional economy, the position of the region's clusters relative to competitors and the region's general and specialized economic input advantages. The outcome is an appraisal of the regional portfolio in terms of each cluster's status, prognosis and major development challenges.

Key lessons for diagnosis

Lesson D1:

Provide a neutral and independent analyst/resource who can "tell it like it is"

In many cases, leaders of a cluster-based initiative hired an outside consultant to conduct the economic research on the region and its industry clusters. In some cases, the consultant designed and facilitated the entire cluster initiative as well. The use of

an outside analyst was viewed by the leaders of many cluster efforts as important to enhancing the credibility of the initiative through “scientific” neutrality. This is especially important when there is considerable factionalism in the community or when the news about the region’s economic situation is bad or controversial. In addition, the application of sound methods of data collection and analysis may dispel myths about the region’s economic situation and thereby make participants more receptive to change.

In Southwestern Pennsylvania, the research capabilities of many organizations were utilized, blending the academic expertise of university economic research centers, the technical capabilities of outside consulting firms, and the practical experience of local economic development agencies. In SELAC, the findings from an early analysis by a local consulting group of the impact of defense shutdowns on the region was cited as a turning point in mobilizing the region to take action. Later in the project, SELAC leaders chose to team with a national firm to provide broader credibility for the analysis. In Ventura, on the other hand, there were credibility concerns at the start. Therefore, hiring impartial, credible third parties for the diagnostic phase was viewed as important to the initiative. Regions may also need to hire separate consultants to conduct specialized diagnoses depending on their region’s specific problems. For example, for Project California, an international consulting firm specializing in cluster analysis was contracted to assess California’s technology competencies, strengths and weaknesses and make recommendations to strengthen the state’s competitive advantage. At the same time, another national consulting firm conducted market analysis for each of the six industry clusters selected for the project. The market analysis results were evaluated against the competencies assessment to select final technology areas for which to develop action agendas.

Lesson D2:

Involve and build momentum for the initiative across the community through a participatory diagnostic process

Using participatory and collaborative processes during the diagnosis stage can not only improve the accuracy of regional cluster analysis, it can also engage key stakeholders in ways that start their ongoing participation. Participatory techniques can include one-on-one interviews, and working meetings for different groups, e.g., industries and economic infrastructure providers. Exhibit V-2 describes the different ways regions have or have not used participatory diagnostic techniques.

Several of the cases show the importance of crafting a compelling story about the changing economy and the threats and opportunities on the horizon. “Story telling” is a proven way to engage leaders in the community and raise the stakes about the future. Often the story is built around troubling projections for the future performance of the region’s economy. In SELAC, a provocative video of regional problems

Exhibit V-2 Using participatory techniques to aid cluster diagnosis

JVSV and East Tennessee initiatives: The Silicon Valley and East Tennessee initiatives relied heavily on a “user-driven” diagnostic process consisting of an extensive series of working group meetings involving industry and public sector representatives. In a separate but linked phase of the initiative, a comprehensive media strategy to convey the project’s findings and activities to the region helped stir community interest.

Ventura County initiative: Ventura undertook a collaborative process of mapping out the technology competencies of the region’s defense contractors to analyze possibilities for applications and spin-offs to non-defense businesses. Contractors found complementary capabilities on which they could work.

Austin and Florida initiatives: Both the Austin and State of Florida projects used extensive interviews as part of the diagnosis, but did not establish working group meeting processes. Although the interviews provided much of the necessary analytic input to the process, without the interactive working groups both projects had somewhat less than ideal implementation outcomes. Observers of these regions’ initiatives believe that the working groups would have helped develop the higher level of understanding and broader buy-in for the plan that was recommended, leading to more successful implementation.

and presentations by regional business leaders (who had not met before) was shown around the region and helped set the stage for action. Exhibit V-3 provides examples of ways regions can use media to reach out to stakeholders.

Lesson D3:

Use cluster analytical techniques to identify regional strengths and strategic opportunities

Three important cluster analytic techniques can be used in the diagnosis stage to identify a region’s cluster strengths, challenges and strategic opportunities.

1. Identify your regional cluster portfolio

After reviewing the region’s overall economic performance, the next step for a region is to understand the structure and unique capacities of its industrial base. Cluster analysis can be used to identify a region’s industry portfolio by using quantitative variables such as industry employment size and measures of cluster concentration. By aggregating traditional industry sectors in a way that reflects vertical and horizontal linkages and commonalities, cluster analysis can provide a region with a new way of understanding its industrial capacities. For example, leaders in Austin recognized the rising significance of the electronics sectors in their economy through cluster diagnostic techniques. Figure V-1.

Exhibit V-3 Communicating the regional assessment:
How leaders use media to tell a unifying story

Slide shows: Color slides on regional economic structure and challenges can be created and loaned.

Reports reprints: Distributed by mailing list to targeted audiences in region, or, reprinted by newspapers as a supplement.

Newsletters: Priority issues and challenges communicated with backing from stewards in region.

Public forums or “town halls”: Major regional events for interactive discussion of challenges often broadcast on TV or radio, with significant news coverage.

Videos: 10 to 20 minute video of key stories focusing on the diagnosis financed by sponsors or produced with donated services and made available to regional organizations.

Television and newspaper stories and press briefings: Preparation of press kits and releases to correspond with conclusion of the diagnosis and later stages of process.

Editorials: Planned editorials on implications of diagnosis prepared by leaders and stakeholders from region, designed to build concern and participation in follow-on activities.

Web site: Develop a web site for the initiative with pages for data and feedback, have volunteers develop and locate on a sponsors server.

Attitude surveys: Polling of regional stakeholders and citizens on challenges covered in publications.

2. Benchmark regional position

Many regions have also used “benchmarking” techniques as part of the diagnosis process. Benchmarking looks at the performance of the region’s cluster economy not just in absolute terms, but against the performance of similar industry clusters in key competitor regions. For example, a region’s cluster of electronics industries may be growing in employment at a rate that is near or slightly above the average employment growth rate of the U.S. This may seem like good performance, until one is shown that the best performing electronics clusters in the nation are growing at three times the national average. Such news helps grab the attention of regional stakeholders. In addition, benchmarking enables leaders to understand their strengths and weaknesses vis-à-vis their competitors, providing further information for formulating economic strategy. Austin’s leaders continue to benchmark their cluster performance in an ongoing effort to shape high value-added economic growth. See Figure V-2.

Figure V-1 Metropolitan Austin's industry clusters

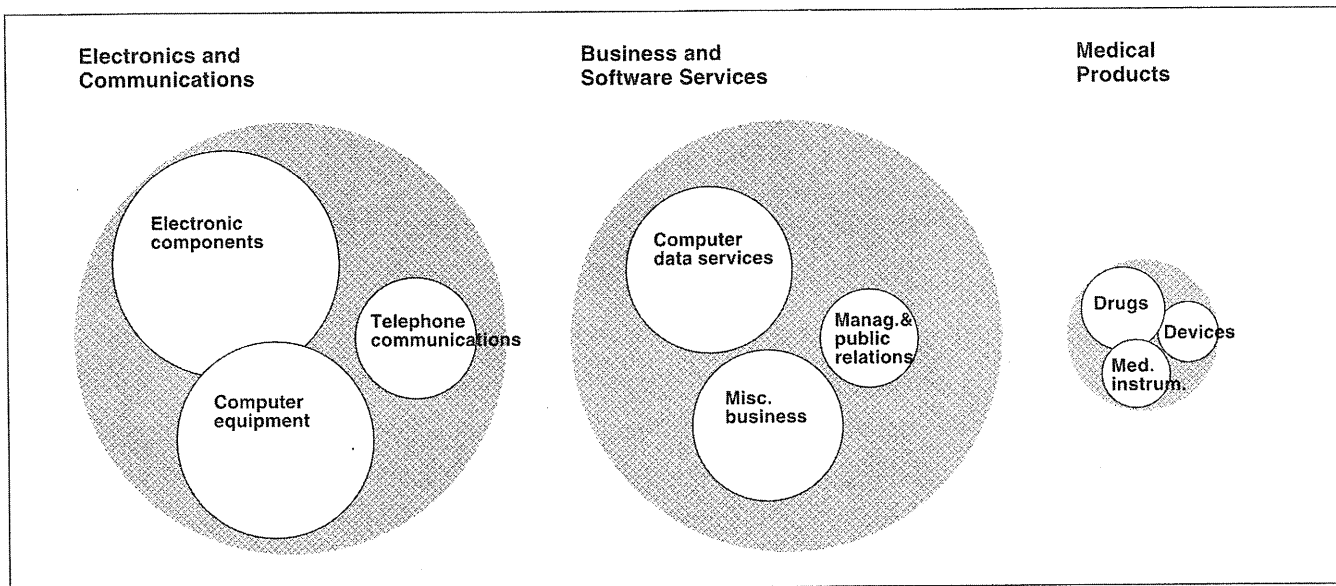
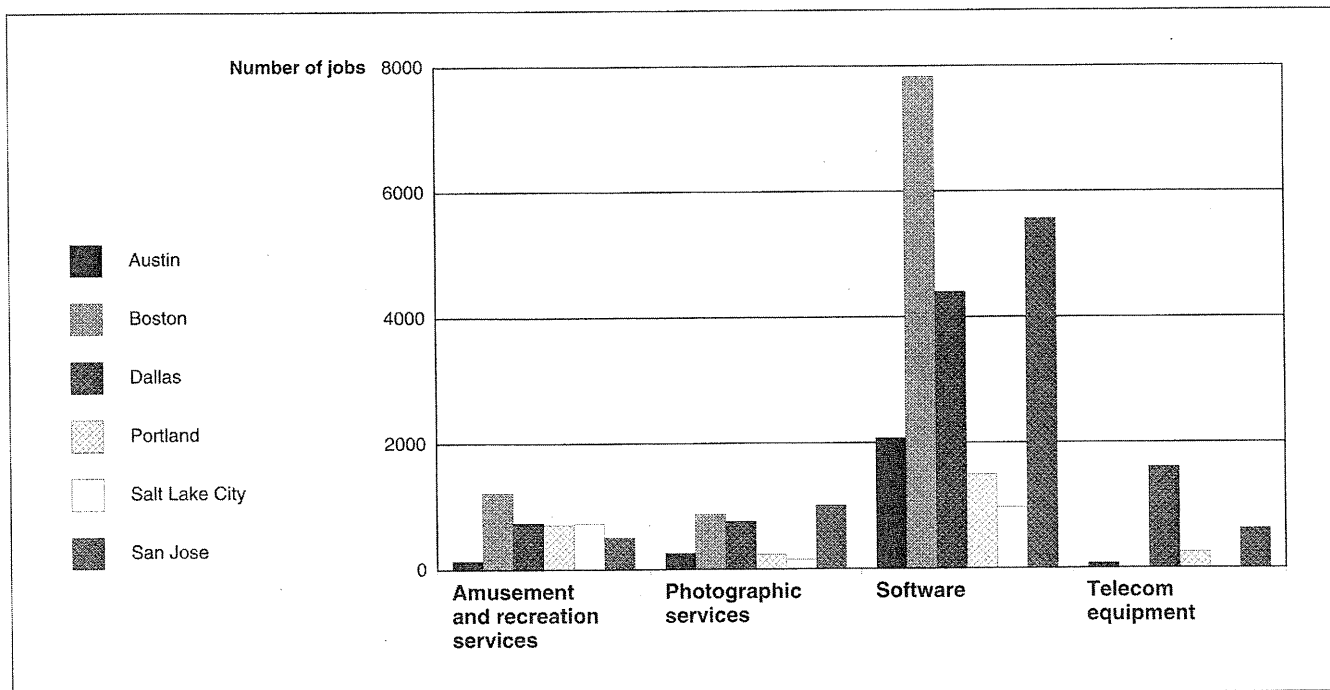


Figure V-2 Absolute employment change in four emerging industries, Austin and five other cities, 1994-95



3. Benchmark regional economic infrastructure

As regions explore the competitive position of their clusters, they must ask whether or not the region has provided these clusters with the economic inputs needed to support and create an advantage for their formation and growth. Regions can evaluate how responsive their supplier institutions are to cluster needs by direct inquiry and by comparing their supplier institutions to “competitor” regions. In Florida Cornerstone, economic indicators were developed in 1988, then again in 1992, for technology, education, and capital inputs. Exhibit V-4 shows how Florida ranked among the states for these indicators. These kinds of assessments help focus the public and private partnership efforts on collaborative actions statewide.

4. Assess strategic challenges and opportunities

Moving beyond descriptive techniques, cluster analysis can also be used as a basis for forecasting trends and identifying strategic opportunities. In East Tennessee, a supplier gap analysis of each of the region’s clusters identified potential areas for future growth and targeted business attraction. For example, a supplier gap analysis of the auto cluster showed that in a two hundred mile radius of the region, there was extensive demand but little supply of several automotive and transportation equipment products, including aircraft parts and equipment, screw machine products and iron and steel forgings. This assessment highlighted new opportunities of growth for the region and formed the basis of business attraction and other action initiatives. Other analytic techniques such as the growth-concentrations matrix described in Figure V-3 can indicate potential trends for a region’s clusters.

Exhibit V-4 Florida Cornerstone Economic Infrastructure Benchmarks (1988)

Technology availability

48th in number of scientists and engineers per 1,000 workers
37th in the nation in number of science and engineering students per 1,000
45th in level of R&D per capita
26th in patents

Human resources

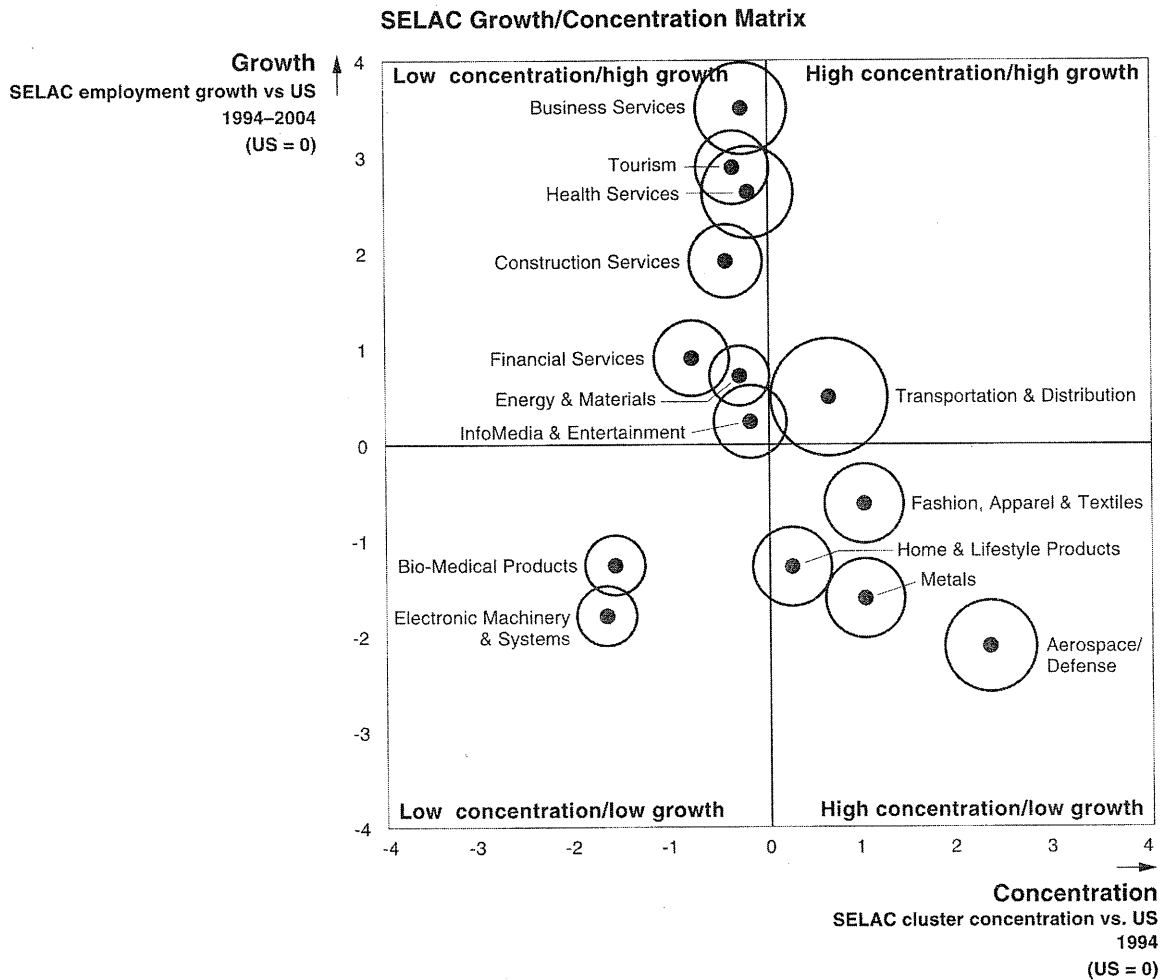
49th in high school graduation
40th in adult literacy
34th in college attainment
27th in K-12 spending per student
24th in higher education spending per student

Capital availability

24th in bank deposits per 1,000 population
41st in commercial and industrial loans per 1,000 workers
33rd in venture capital per 1,000 workers

Figure V-3 Using a growth/concentration matrix to tell the cluster story

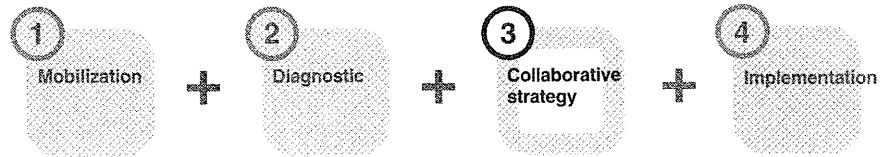
This diagram, which was presented to the stakeholder audience in South East Los Angeles, showed the concentration and growth outlook of the region's portfolio of clusters and became a useful technique for indicating possible strategic directions for the region. Circles indicate relative cluster employment size.



- High concentration/high growth: Requires a good maintenance strategy and investment to maintain conditions for continued development.
- High concentration/low growth: Focus on restructuring to retain value-added components of clusters. Typically requires targeted improvements in retraining, financing, technology transfer for productivity, collaborative marketing and promotion of diversification to retain or increase employment.
- Low concentration/high growth: Need to emphasize new enterprise formation and business recruitment to seize opportunities to capture share of growing markets.
- Low concentration/low growth: Generally low priority for development with efforts limited to opportunities having low cost or high commitment from stakeholders.

Chapter VI

Stage Three: Collaborative strategy



The third stage of cluster development focuses on bringing the representatives of the cluster industries and their suppliers together to craft action plans for growth and enhanced competitiveness. In a global marketplace regional companies in different industries within clusters or with shared needs across clusters can improve their competitiveness by working together. Together they can develop an understanding of their most important shared needs in economic inputs from technology to workforce skills to financing to telecommunications and utilities to regulation and quality of life, and then use their collective leverage to effect improvements in these key economic inputs. The collaborative strategy stage of cluster-based development has the mission of bringing together stakeholders along each cluster's value-chain (e.g., the businesses and institutions that provide the continuum of basic inputs to intermediary supplies to final products) in an inclusive process to define mutually beneficial actions with measurable outcomes.

Some of the key challenges of this stage include the following:

- ***Bringing clusters together to discover common needs:*** A major challenge in this stage is to bring cluster representatives together to define common competitiveness challenges and the shared "returns" to the participating cluster members from addressing these challenges together. Some companies prefer an isolated "survival of the fittest" approach and don't recognize that they can profit from collaborating locally to compete globally. For all cluster members, both questions, "What's in it for me?" and "what's in it for all of us regionally?" need to be answered.
- ***Committing to collaborate:*** A second challenge in the collaborative strategy stage is getting companies and institutions in each cluster working group to define priorities for action, develop business plans to carry out the needed action, commit to participating in implementation of the plans and establish accountability for measurable outcomes.

- ***Building cross-cutting agendas for action:*** Another challenge is finding the common denominators in the region that define the overall economic development opportunities for collaborative action. Case studies show that one industry's cluster strategy typically contains priority actions that have much in common with other industries' cluster strategies. These common areas of action might be in early stage technology or standards development, education and training, financing, communications and utility infrastructure, regulatory issues and quality of life. Crafting an overall economic strategy involves finding these common denominators and defining cross-cutting initiatives that will be the impetus for creating region-wide support for taking action. Thus, a region's cluster strategy includes cluster-by cluster action strategies and a cross-cutting region-wide "flagship" strategy, all with action plans.

Exhibit VI-1 Stage 3 Collaborative Strategy Checklist

Objective: Develop collaborative actions that will improve the competitiveness of individual clusters and overall regional economic performance.

- Are the initial "stewards" still committed to the regional cluster effort and using their clout to recruit appropriate new leaders to guide the collaborative strategy process?
- Are key stakeholders developing the collaborative strategy? Are representatives from large and small companies, government, and other public and private "economic foundation" providers involved in each cluster "working group?"
- Do leaders and participants in each cluster working group recognize their mission to reach a shared view of economic advantages, challenges, and opportunities to enhance competitiveness? What are the priorities for action?
- Are participants willing to "suspend" individual competitive goals in the interest of working collaboratively to improve regional competitiveness?
- Do cluster-specific recommendations have an action plan and action team to lead and carry out strategies?
- Have "cross-cutting" action strategies which benefit several clusters or overall regional competitiveness been identified?
- For all strategies, are action agreements ("business plans") in place; have team members established accountability, resource requirements, and schedules?
- Are action plans closely tied to measurable outcomes? Are performance measures drawn from the diagnostic assessments of the region's clusters and of their supporting economic infrastructure?
- Beyond those directly working on the strategy, who is aware of its potential for the region?

Key lessons for collaborative strategy

Lesson C1:

Hold events that confront and engage participants from key industries and institutions in the region

The collaborative strategy stage is often begun with a “kick-off” event and perhaps followed by other high profile events to keep stakeholders and the public continually updated and engaged in the process. Communication is perhaps one of the most important and least well used tools for helping to bring stakeholders together and build a strong and clear understanding of the need for commitment and investment in cluster actions. There is no necessary communication approach or one that works best. However, regions that have undertaken outreach and communication through a variety of channels, targeted to different audiences, during the mobilization and diagnosis stages, have obtained the best feedback and participation in strategy development. Obtaining good participation is critical, because the collaborative process to develop strategy often consists of a series of numerous group meetings and is a time and labor-intensive activity.

There are several types of high profile events that can be effective tools for drawing key stakeholders into participating in the collaborative strategy stage. In Silicon Valley, a major luncheon event was held to coincide with the release of a controversial, first of its kind, diagnostic report. The luncheon brought 1200 stakeholders together and secured from them a degree of acceptance that there was a problem—that the region was “at risk.” A visioning conference at the beginning of the collaborative stage helped kick-off the strategy process. These high profile events helped cultivate the participation and credibility needed to move the project through the collaborative strategy stage. In Oregon, an initial round of industry forums held across the state led to new private sector participation in network development. Both the East Tennessee and Arizona initiatives relied on town hall-type meetings to launch final strategy reports and action items.

Lesson C2:

Create highly inclusive cluster “working groups”

To develop a broadly shared action agenda for cluster development, many regions have undertaken a structured and professionally facilitated “working group” process. Usually, the working groups are arranged around the key clusters identified for the region. While working group representatives may come together across clusters to define shared needs, the crux of effective cluster development is cluster-specific strategies targeted to the region’s unique cluster structure and resources.

In forming working groups, economic development leaders should seek broad participation both vertically and horizontally within a cluster. Vertical participation includes representatives from along the entire continuum of the value chain, including representatives of industries or institutions that are closely related to the cluster at the outset. This means having both the important export producing industries as

well as their large and small intermediary suppliers, even those whose regional “strength” is only emerging. By bringing a variety of “suppliers” into the cluster strategy, the activity literally becomes a marketplace where improved understanding and hopefully improved “trade” between users and providers can be accomplished. Horizontal participation implies the inclusion of both competing companies in a cluster and representatives of regional public and private institutions that provide economic inputs to cluster industries. The inclusion of such representatives is tremendously important and is part of what differentiates cluster strategy from economic planning done by “experts” in isolation.

In sum, cluster working groups are important because they:

- *Are market-driven:* A useful means to ensure that initiatives arising from the project are shaped by realistic market understanding and industry-specific needs.
- *Link the value chain:* Bring industries together along the chain of value from end producers to suppliers.
- *Convene the market:* Bring stakeholders together who do not traditionally work with each other, including companies that do not typically cooperate and economic institutions that may have no forum to access their major customers as a group.
- *Set the stage for implementation:* Help establish common interests among participants and commitment to action for mutual self-interest.

The existence of cluster working groups seems to have made an important difference in the success of the initiatives studied. In Jacksonville, for example, project leaders and their consultants relied on a cluster working group made up of industry and public institutions representatives to enhance communication between private and public sector stakeholders in the health services and manufacturing industry clusters. In Arizona, cluster working groups became the driving force behind implementation and were, in fact, more effective at implementing initiatives than the larger statewide entity, GSPED, set up to be the implementing organization. In the Arizona case, funding for cluster organizations was provided by private resources and business volunteers while the federal government provided grants for specific cluster projects. The Optics cluster working group, in particular, became very active and continues today as a formal industry association reaching out to national and international counterpart groups. The Florida Cornerstone initiative, on the other hand, did not organize regional cluster working groups as a central part of the process and its results lacked industry-specific initiatives. Instead, the action recommendations coming out of the project focused more on building up public sector capacity to support all the state's clusters.

Exhibit VI-2 Washington Manufacturing Networks

Leaders of this initiative found that forming industry networks is an effective means to bring companies together to help groups do what individual companies cannot do alone. Flexible manufacturing network formation brought together small and medium sized defense companies to jointly pursue opportunities to improve competitiveness. Attracting industry leaders into the process was the first critical step. Washington Manufacturing Networks introduced the concept of networks to industry, and identified companies interested in forming networks through an outreach effort. Through this collaborative network approach, defense firms are diversifying into new, non-military networks.

There are no boundaries on the form of work group structures. Network groups, for example, are often useful when there are many smaller firms (suppliers) and fewer larger firms (buyers) in a region. This was the case in Washington State (Exhibit V-2). In other cases, where industry stakeholders are more geographically dispersed, an association can be a useful mechanism for strategy development and collaboration, as was the case in Oregon.

Lesson C3:

Select working group leaders who are committed and can recruit

high profile participants representing small and large companies in the region

As has been discussed with regard to the mobilization stage, there are different types of project leaders, including different types of working group leaders. Leadership styles can range from that of a pro-active facilitator, to a reluctant, yet still competent chairman of the group. Different leadership skills can contribute to both different group dynamics and to different outcomes.

A leading example of the critical role that the right selection of leadership can play occurred in Silicon Valley. The CEO of one of the country's largest producers of semiconductor manufacturing equipment was the overall chairman of this initiative. Because of his position in the community, he was able to reach into his personal network to recruit co-chairs for each working group (one for each cluster). Influential and, in most cases, charismatic, co-chairs contributed to an effective collaborative strategy. In nearly every case, the private sector co-chairs dipped into the financial resources of their companies to help. But not all regions have the enthusiasm and resources that characterize the Silicon Valley and often it takes more time for regional stakeholders to find committed participants.

Exhibit VI-3 Types of working group leaders

Statesmen: Well-respected participants whose presence gives credibility and whose word has weight with others—which helps in inducing others to participate.

Stars: Recognized individuals whose presence makes the process attractive, but whose time is often limited.

Deans: Individuals with strong authority and often a strong agenda.

Coaches: Modest leaders with capacity to energize others to take on responsibility.

Judges: Authorities who reluctantly have taken on responsibilities to keep the process going, being tough facilitators and arbitrators as needed.

Sergeants: Aggressive managers who herd participants into doing their jobs.

Scholars: Intellectual participants whose interest in the subject energizes the dialogue but sometimes lacks business focus.

Entrepreneurial engineers: Strong self-made business people who have energy and a willingness to structure process and manage others to specific ends.

Lesson C4:

Create accountability mechanisms and progress milestones throughout the process

The cluster process is designed to produce action-oriented strategies. In order to implement the strategies, the collaborative strategy process needs to focus on creating a chain of command and mechanisms for ensuring responsibility and accountability of the cluster participants, including the co-chairs. Without the formality of reporting responsibilities the working group process can either bog down or get off track and fail to meet key objectives. Some of the following techniques can be used to ensure that the collaborative strategy process stays on track and is action-oriented:

- When identifying cluster challenges, encourage participants to talk only about problems they have experienced, not what they have heard.
- When identifying priorities, group members may use a voting process, not just consensus.
- When proposing ideas for action initiatives, those proposing the ideas should be pressed to commit to crafting the action plan.
- When developing action plans, participants should be asked to take substantial roles in moving the plans forward into action.

Exhibit VI-4 The challenge of building and sustaining cluster participation:
The SELAC experience

In South East Los Angeles, the sponsoring group of 27 cities had never before worked directly with industry across their different jurisdictions. After a successful regional forum with over 300 participants, organizing cluster working groups still proved challenging. This task was difficult first because the region did not have many large companies or corporate headquarters and second because the cities, many of which were small communities, did not yet have a shared organization for identifying and bringing companies together. Working with a few larger companies and consultants to the cluster effort, five cluster groups were organized. These were: transportation and logistics, aerospace and metals, petrochemicals and energy, fashion, and home and lifestyle products. After initial work sessions several cluster groups lost their interest while others became more enthusiastic. The SELAC region faced a dilemma: How to maintain the engagement of industry and infrastructure participants and concurrently create the missing mechanism and resources needed to move cluster activities forward. While some of the existing cluster groups have continued to work, each finding their own way in collaborative strategy, the effort was incomplete. Several of the cluster groups had few smaller enterprises and institutional participants. Another missing element was the absence of working groups for the emerging clusters of infomedia and tourism that had significant potential in the region, but for which no stakeholders had been identified. Despite its difficulties, a committee of five city managers and five economic development and assistant city managers kept the momentum going. The conclusion of the collaborative strategy phase of activity was a moment of pride for the sponsoring communities and their cluster leaders. Their success in collaborating set the stage for a realistic, though difficult, ongoing implementation.

Lesson C5:

**Develop concrete action plans for cluster-specific initiatives
as bridges to implementation**

Collaborative action plans are the most important part of cluster-based strategies. These plans represent agreements among participants in the marketplace to create new initiatives and/or change existing relationships. It is through these collaboratively developed agreements that innovation in the economy is accelerated. There is no one “right” type of collaborative action plan. Each action plan should reflect the cluster working group’s new understanding of demand and supply challenges and opportunities as well as their insights into how to solve problems and create new advantage. Most collaborative action plans focus on how to improve one or more systems of economic infrastructure (e.g., technology, skill development, early stage

Exhibit VI-5 Building accountability mechanisms into the collaborative strategy process

Arizona: Leaders of this project developed formal reporting processes to ensure that working group results were regularly reported either to the Governor or separately to stakeholders via public forums. Records of working group progress were kept formally and a schedule of milestones developed to manage the project overall. The fact that there were formal deadlines to report progress motivated the groups to keep on track and to produce results.

Silicon Valley: Leaders of JVSV set up a system of required formal presentations by the working group co-chairs to one of the top leadership groups throughout the process. The leadership group also developed an objective set of criteria against which to screen group recommendations in an effort to narrow the number of the final initiatives.

financing, regulatory compliance) of key importance to the cluster member companies. For example action agreements may focus on:

- **Reform and redesign:** Improving existing public services through informing and creating a dialogue between companies and agencies about what changes are needed and creating a process for introducing reform (e.g., for permits or taxes).
- **Adding value to existing resources:** Creating new opportunities for existing providers, such as school systems, colleges and technical trainers, by creating a forum to better define company needs and innovating in market responsive delivery mechanisms, such as on-site training or distance learning.
- **Market innovation:** Forming entirely new organizations and making new investments shaped to meet cluster requirements, as in the case of regional enterprise finance companies and technology incubation and commercialization services.

The initiatives examined for this report show that, as a result of the cluster working groups, an array of different types of collaborative action plans can emerge. The action plans might include a mix of recommended initiatives for individual clusters, some focusing on private sector action, others on public sector action and others still on new private-public partnerships. Often, the needs of clusters are organized into cross cutting “flagship” action initiatives that serve many clusters.

Arizona's export promotion program: One major initiative arising from Arizona's cluster strategy effort was an export promotion program developed jointly by the optics, environmental technology, and software cluster groups along with local government agencies. This initiative was developed and shepherded by leaders from the Morrison Institute of Public Policy at Arizona State University and funded by the U.S. Department of Commerce's Market Development Cooperation Program (MDCP).

Workforce development and business recruitment in East Tennessee: East Tennessee had difficulty translating much of its plan to action because of a lack of commitment of resources to the implementation stage. As a result, there was little support for creating new organizations to oversee new initiatives. However, where organizations were identified as having vested interests in spearheading desired initiatives, substantial progress did result. For example, Pellissippi Community College saw the potential benefits of the recommended workforce initiatives and implemented several school-to-work transition programs. Also, Tennessee Resource Valley revamped its regional marketing efforts to reflect the recommendations coming from the collaborative strategy.

Lesson C6:

Establish the market viability of each initiative to ensure the necessary support from stakeholders for implementation

Action initiatives that stem from working groups run the risk of becoming little more than panel recommendations with small chance for implementation if there are no stakeholders willing to be responsible for taking the next step. One of the greatest challenges of successful cluster-based economic development is to ensure that the outcome of the collaborative strategy process is both responsive to the needs of the cluster and supplier institutions as well as feasible. Yet, many participants, while having experience in industry, government, utilities, or academia, may never have engaged in the process of designing a business plan for a solution that bridges sectors and institutions. For this reason the business acumen and real-world knowledge of participants needs to be engaged in the process of developing and screening the actions on which each cluster group has chosen to focus.

Cluster group leaders can use a simplified business planning model that emphasizes laying out key elements of an action initiative so that participants may be better able to ensure its market viability (there is real demand for the action) and feasibility (there are practitioners ready to do it). Exhibit VI-7 and VI-8 highlight some of the considerations involved in developing action plans.

Exhibit VI-7 Developing action plans for cluster initiatives

Mission: Clearly state the mission of the action initiative, its overall strategic focus and what it will accomplish.

Key objectives: Enumerate the specific activities that will be carried out under the action initiative.

Organizational structure: Specify which organizations will take responsibility at each step in the action initiative.

Proposed operations: Plan how key actions will be carried out in the action initiative.

Resource requirement: Identify the necessary funding and resources (e.g., contributed time, materials) required to implement the plan for the action initiative.

Implementation team: Assign responsibility to staff and volunteers for moving action steps forward.

Schedule and milestones: Develop a schedule and milestones to guide the timing of implementation and to create accountability.

Exhibit VI-8 Making sure the action plan has strong market-driven rationale

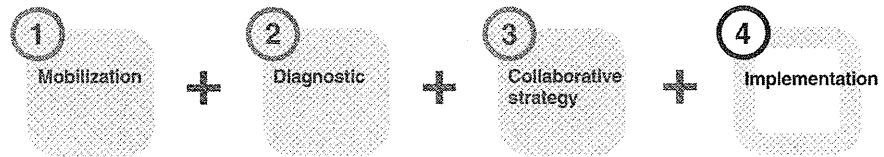
CALSTART: The CALSTART initiative was designed as a market-driven model. In developing initiatives CALSTART staff first assessed market forces and industry needs then built collaborative R&D and product design partnerships to speed development. CALSTART then identified public and private funding to further accelerate the timeline and provide the support structure to test, showcase and market new prototypes.

JVSV: The Global Trading Center action initiative, one of several of JVSV's major recommendations, failed to test market demand for its services (e.g., what types of services are needed by industries) at the time it was recommended. Moreover, the leaders of the project were rushing at the time to implement "high visibility" initiatives to demonstrate that JVSV was more than just a forum for discussing problems. Within a fairly short period of time, it was clear that the Center would fail to attract enough members and further efforts toward its implementation were halted.

El Paso's CREA initiative: CREA passed the market test with a successful business matchmaking process, which included bringing together from across the border company leaders, buyers and suppliers, and ultimately, clusters. The quick success of the matchmaking process provided a foundation on which other initiatives could be launched, including their cross border World Trade Center and Trade Corridor Alliance.

Chapter VII

Stage Four: Implementation



At the conclusion of the collaborative strategy stage of a cluster-based development initiative, there should be many specific actions designated that the region can take to improve the competitiveness of its industry clusters. These actions may be in direct support of individual clusters, or may be aimed at broadly strengthening the region's economic infrastructure as supporting input to many industry clusters. If the collaborative strategy stage has been well structured, there should be a core group of enthusiastic participants who are committed to implementing the action plans. The implementation stage then needs to be concerned with devising appropriate institutional structures and marshaling resources to carry out action plans. However, it is most often at the implementation stage that efforts falter. To ensure successful implementation of cluster development initiatives, economic development leaders should be certain to have the answers to the questions in the Stage 4 Checklist (Exhibit VII-1) and attend to the following priorities:

Taking responsibility for implementation

Implementation does not happen automatically once the negotiation of action plans is completed during the working group process of the collaborative strategy stage. Responsibility for carrying out initiatives needs to be clearly assigned. Sometimes responsibility for action is passed on to existing cluster working groups. Mechanisms are needed to maintain the momentum of these working groups, or to replace them with new action-oriented structures. In some instances an existing region-wide organization might already be in place to supervise, monitor and encourage implementation. In other cases a new leadership organization might need to be established from among the original stewards of the initiative and leaders of the cluster working groups. There is no one prescribed form for a successful implementation organization. Such organizations may be either ad-hoc or formally incorporated entities. They may include varied combinations of cluster-related business leaders and leaders of the supporting economic institutions (e.g., government agencies, universities, utilities). Whatever their form, the mission of these leadership groups is to reinforce the commitments to public and private action that arose earlier in the cluster-based initiative.

Sustaining cluster-specific and cross-cutting action will require an organization (or a strong network of organizations) with the mission of providing leadership and technical support for implementation. Having an organization with this mission can make the difference between a cluster initiative turning out to be simply “another plan” or becoming a catalytic force for market and institutional change in a region’s economy. Sustaining a climate for continuous innovation of cluster initiatives will occur if the leadership organization revisits its achievements (and failures) and proposes new areas for collaborative action and remains open to new cluster development efforts from emerging or previously non-participating clusters.

Exhibit VII-1 Stage 4 Implementation Checklist

Objective: Create an organizational system to implement action initiatives and to sustain the cluster-based effort by reviewing outcomes and by preparing new cluster-based regional actions.

- Are leaders and stakeholders still committed to action? Are participants still motivated by self-interest to work for region-wide interests?
- Who is responsible for oversight of the cluster-based implementation effort? Are there adequate (even if modest) resources in either existing or new organizations to minimize fragmentation of the effort?
- Have the cluster working groups identified (or created) organizations with the internal capacity, authority and independence to carry out action initiatives? Are action plans and action teams “institutionalized” in existing (or new) non-profits, for profits, partnerships, network or alliances?
- Are there mechanisms for tracking progress and providing ongoing feedback, benchmarking, and troubleshooting?
- Is a communication and outreach program needed for cluster-specific and cross-cutting, regional initiatives?
- Is the “cluster logic” becoming institutionalized in agile and adaptive ways? Are new, cluster initiatives encouraged? Who will update the regional cluster diagnosis and when?

Building action teams

Often the members of industry cluster groups who developed action-oriented business plans formalize “action teams” that continue to work on implementation issues. These teams may comprise business leaders and institutional managers committed to mobilize other resources and seeing that action steps are carried out (Exhibit VII-2). Case studies suggest that action initiatives championed by specific institutions with clout and sufficient resources, rather than by individuals or ad-hoc groups, are successfully implemented. Action teams need to identify and develop funding sources and institutions to shepherd each action initiative into full realization. In some cases, the individual action initiatives themselves will require creating new nonprofit or for-profit organizations.

Exhibit VII-2 Marshaling resources for implementation:
The St. Louis Critical Technology Partnership

One of several initiatives recommended in the report of the St. Louis defense adjustment task force was the establishment of a St. Louis Critical Technology Partnership. The idea of the Partnership was to provide a regional forum for information exchange, networking and consortium building among emerging technology firms. The task force process had generated enthusiasm among local business leaders for further cooperative efforts and the committee set up to lead the defense adjustment initiative was successful in procuring additional funding from the Dept. of Defense, the Dept. of Commerce, and the State of Missouri. This funding was used for follow-up research and implementation of workforce and business development initiatives as well as the Critical Technologies Partnership.

Key lessons for implementation

Lesson 11:

Create a management stewardship group by identifying a new or existing organization to spearhead and oversee the initiative

Every region will approach the challenge of implementation with a different set of public and private resources already in place. No matter what type of private sector or governmental leadership exists, a mechanism to keep the collaborative process moving forward will be required. Sometimes this stewardship group will come from civic leaders other times from the chairs of the cluster group themselves. Continuity of effort is the goal. Exhibit VII-3 describes some of the different organizational structures that regions have used to oversee implementation.

Lesson 12:

Use the cluster framework to facilitate supply and demand side connections

One of the primary purposes of cluster-based initiatives is to help bring the “market-place” together in new ways that enhance cooperation and responsiveness among firms (i.e. between producers and suppliers,) and among firms and providers of economic infrastructure inputs. In carrying out action initiatives, economic development leaders should take extra care to enable dialogue among diverse constituencies comprising each cluster. This was done well in the El Paso/Camino Real initiative through the creation of the Camino Real Economic Alliance. The Alliance gradually emerged as exchanges between business, government and institutional leaders first took place within and across the regions on both sides of the border (Chihuahua followed by El Paso/Juarez) then expanded across the Southwest to Los Cruces, Albuquerque, and Santa Fe. This cross-border exchange enabled definition of mutually beneficial cluster development priorities in tourism, fashion and trade and resulted

Exhibit VII-3 Designing the appropriate institutional mechanism for implementation

SELAC: SELAC created the Gateway Cities Partnership to spearhead implementation. This new regional organization evolved from the frustration of the 26 cities with the absence of a coherent rallying point for the collective interests of the cities and their industries. The Gateway Cities Partnership is a nonprofit organization that is affiliated with a Council of Governments (COG) newly created by these cities as a concurrent result of their cluster strategy. The COG's mission is to plan, coordinate and advocate for Southeast Los Angeles' interests. This entity was encouraged by the Southern California Association of Governments (SCAG), who recognized that this substantial area of almost 1 million people needed a voice of its own and mechanism to focus action.

Connecticut: The current governor created a group to implement the recommendations that came out of the diagnosis and collaborative strategy processes completed under the previous governor. Because the new group took a long time to come up to speed, the transition from study to action was delayed for a year, with the exception for one active cluster (tourism). Now, under the governor and with renewed and focused private sector support, implementation is moving forward again with stronger state preparedness to respond to those clusters showing readiness to act.

Arizona: At the completion of the ASPED collaborative strategy leaders of this initiative created a new overarching organization known as the Governor's Strategic Plan for Economic Development, or GSPED, to oversee the implementation stage. To oversee the implementation of specific action initiatives when no existing organization was deemed appropriate for the role, they established new organizations and assigned them the mission of advancing the specific ideas. In cases where an existing organization was already in place and willing to advance implementation, agreements were reached giving that organization responsibility for taking the appropriate action.

Florida: Over a two year period, the State Department of Commerce and the Chamber of Commerce worked to establish an implementing organization for the state's Cornerstone economic strategy, known as Enterprise Florida. Envisioned as a public-private partnership, Enterprise Florida was led by the governor and a senior leader from the state's business community (a respected bank CEO). Funded by the state, three public-private partnerships were established within two years of the organization's founding. These were organized around: Innovation; Capital; and Workforce Development. However, the partnerships were complex political entities and presented a heavy management burden for the fledgling organization, subsequently slowing the implementation process and diminishing the focus on regional cluster development. In addition, the structure of Enterprise Florida brought with it competition among regions in the state for scarce state funding of local economic development.

East Tennessee: This case study makes a clear case for quickly assigning "ownership" of initiatives to organizations with a vested interest or stake in the action. A slow process of doing so, and the lack of sufficient "buy-in" up front for the initiative doom eventual implementation. Securing ownership up front by existing organizations can be more effective than later creating a new organization which might ultimately focus mostly on its own survival rather than on getting the assigned job done. Effective initiative-focused organizations often terminate their operations when their implementation job is complete while broader organizations for catalyzing and overseeing cluster development may remain in place.

in shared initiatives to develop supporting infrastructure that would contribute to the cluster growth in the Camino Real economy, including the first cross-border world trade center, an apparel production network and advocacy for cross-border highway investment.

This same supply-demand logic has been used effectively in other regions to address specific economic infrastructure needs of specific clusters. Among such efforts are venture capital forums that bring together new enterprises with investors interested in specific clusters, such as multimedia or biotechnology. The New York Venture Capital Conferences, sponsored by the New York Economic Development Corporation in conjunction with private investment companies with whom the city has established a regionally-focused public-private investment fund (The Discovery Fund), is one such example.

In other cases a single regional cluster is the logic around which the market is convened to create innovations in many parts of the economic infrastructure. In Grand Rapids, Michigan, for example, the “Right Place” program sponsored by the region’s public and private leaders, has for many years focused on strengthening the West Michigan furniture cluster through convening businesses and regional economic infrastructure institutions. These efforts have resulted in jointly sponsored furniture-focused training and technology services through community college and specially created technical institutions. As regions become more aware of their clusters and the need to create regional competitive advantages they are becoming more comfortable and more innovative in bringing the marketplace together (see Exhibit VII-4).

Exhibit VII-4 The force of the cluster logic in St. Louis

The cluster concept was embraced for implementation of workforce transitioning efforts as part of the St. Louis cluster-based strategy. The region’s job training and placement efforts identified defense industry skills with applications in the commercial marketplace by using the cluster framework to analyze job opportunities and shared skill sets in clusters. The result is a cluster-focused initiative designed to transfer laid-off defense workers to new employment opportunities. Part of the strategy is to identify access points for jobs within the defense cluster (e.g., small defense supplier firms currently diversifying into new markets). Based on initial diagnostic analysis, the initiative is working with service providers and employers to improve job re-training and placement. The cluster structure enables practitioners to look beyond individual industry sectors and focus on “industry linkages” within the broad clusters of new job opportunities. Several years down the road, the program has tracked laid off workers and found that 60% found comparable jobs in the region’s automobile, metal fabrication, information technology and engineering consulting firms.

Lesson 13:**Identify sources for ongoing funding commensurate with the type and scale of action initiatives**

The sources and amounts of funding required to pursue local action initiatives vary depending on the scope of the effort, the use of consultants or existing staff, and the overall goals of the initiative. There may be financial needs to support the implementation oversight group as well as direct funding needs for the operation of individual initiatives. The availability of resources at the right time and level can significantly contribute to the survival (or demise) of specific initiatives.

Potential funding may take the form of private sector investment, donations, in-kind support, foundation grants, state and/or local budget allocations, federal grants and various combinations of the above. (See Exhibit VII-5.) The initiatives studied here tapped an array of funding sources. In Oregon state lottery income was designated through legislative action to fund an array of economic development activities, including the state's cluster initiative. In Silicon Valley, \$600,000 of critical seed capital was provided by local public and private organizations which was followed by a matching grant from the Economic Development Administration (EDA) of the U.S. Department of Commerce. The EDA grant supported the JVS network and three initiatives over a two-year period to assist defense conversion-related activities. The EDA grant played an instrumental "incubation" role in nurturing initiatives at the start-up phase. In both Jacksonville and East Tennessee on the other hand, the projects lost momentum due to lack of financial resources at the critical implementation stage.

Successful implementation is, of course, closely tied to the availability of funding which, in turn, is closely tied to market demand for the initiative and its intended outcomes. For example, the Connecticut Tourism initiative arising from that state's cluster strategy project, and the JVS Defense Consortium both grew over time and attracted more funding from public and private sources, while other initiatives of seemingly equal value disappeared. This highlights the fact that initiative leaders must consider how to develop within region revenue sources for the life of their initiatives if they are to sustain them particularly after federal or other external "incubation" funding ends.

Lesson 14:**Sustain sources of new leadership**

As cluster initiatives evolve, it is reasonable to expect to lose some participants. Champions from the earliest stages of a project face competing demands for their time or may lose interest. To ensure continuity of the initiative, it is, therefore, important to have in place mechanisms to continuously draw new champions into the process. New leadership is also important for keeping the "idea flow" fresh and recruiting champions with different skill sets. For example, effective implementation may require stronger day-to-day management skills and less effort to catalyze inter-

Exhibit VII-5 Potential sources of financial support and forms of funding

Syndicated projects: Projects or organizations funded by membership subscription or grants.

Local corporations: In-kind time or facilities, corporate foundation grants, direct investments.

Chambers of Commerce: Grants for organizations or special projects on regional economy.

Industry associations: Grants for special projects relating to a cluster (e.g., semiconductors).

Local utilities: Non-shareholder dollars for projects to assist clusters (utility customers).

Foundations: Grants for theme-specific initiatives supported by foundation.

Universities: In kind contribution of faculty time to initiatives and facilities.

Economic development corporations: Funding of industry projects, investments or loans.

State Departments of Commerce: Competitive grants or special programmatic allocations.

Federal Government: Technical assistance, planning, and infrastructure grants.

est and participation than earlier stages of the process. In Arizona, for example; researchers from Arizona State University's Morrison Institute of Public Policy were brought into the project as a way of ensuring continued technical support for initiatives after the primary consulting firm completed its work.

Initiatives that do not anticipate and plan for leadership transitions have suffered setbacks or made slower progress as a result. In Jacksonville, a key champion left the initiative without an effective way to suddenly replace his extensive knowledge of the project and shift responsibility to another organization. In Monterey, the University of California, the key organization leading the effort, could not commit itself to any institutional presence such as a branch campus or department at the UC MBEST Center site during the strategy development process. Without a catalytic investment by UC or any other regional stakeholder, implementation of the plan for a research park may move forward more slowly than originally hoped. In Austin, the election of a new major, who did not share the pro-growth view of the cluster initiative, slowed its implementation for two years until the political view shifted back.

Lesson 15:

Build a monitoring system to track activities and communicate outcomes

The purpose of cluster-based initiatives is, ultimately, to improve the economic performance of a region through strengthening the competitiveness of regional industry clusters. Regions, therefore, need to develop appropriate measures of economic performance in order to determine whether a cluster initiative is achieving its objectives. Such measures serve two critical purposes. First, they help initiative leaders understand the effects of their actions and assess whether actions are accomplishing their desired results. Second, progress measures provide a way to communicate to key stakeholders and the general public how the project is doing. This information is important to sustaining support and participation.

A variety of types of progress measures can be used depending on the nature of the initiative and the type of message leaders wish to communicate. Measures should include both programmatic and outcome information so that leaders can convey both what activities are underway and the effects these activities are having. Often these measures can be drawn from the ones used in the diagnostic stage or developed in the cluster action plans. While quantitative measures are always the most concrete way to measure change, qualitative information is also very important for showing the range of activities supporting improved cluster and regional performance. Among the major types of measures that every cluster-based economic initiative should track are:

Regional economic performance: Growth, diversity and quality of jobs and regional income.

Structure and health of the cluster portfolio: Size, concentration, growth, value-added and industry mix of the region's key clusters.

Responsiveness of economic infrastructure to clusters: Quality customer responsiveness and availability of systems providing technology, human resources, financing, physical infrastructure, information infrastructure, tax and regulatory oversight, and quality of life.

Many regions have created benchmarking systems to track regional changes in the overall economy, cluster competitiveness and economic foundations. The strategic planning process in Southwest Pennsylvania produced specific goals and timetables. Leaders set a goal of creating 10,000 new jobs by the year 2000. The metrics, however, did not emphasize measurement of cluster or economic infrastructure inputs to the economy. Oregon designed a "leading edge" system called *Oregon Benchmarks* to track progress on measures ranging from job creation to educational performance, relative to other states around the nation. In Silicon Valley, the JSV network created a basic monitoring system to assess regional economic progress over time, through

the periodic publication of the Silicon Valley Index. The Index focuses primarily on regional economic outcomes, not specifically on cluster development nor on how the region's economic infrastructure is responding to cluster needs.

Outcomes of effective implementation: Examples of action initiatives

When leaders have taken the necessary steps (e.g. secure funding and institutional and leadership support) during the final implementation stage by combining all the necessary ingredients regions enjoy tangible results.

Trade initiative: El Paso's Agenda 21 initiative and Chihuahua's Siglo XXI initiative came together because of decisions on the part of private sector leaders on both sides of the border to launch the El Paso/Juarez Interplex World Trade Center. These leaders committed to form a board of directors representing cross-border interests and to raise \$200,000 for initial activities. This action initiative emerged as a result of the cluster initiatives of two groups who saw the potential for linking efforts. Implementation was jointly funded and managed. The first international cross-border World Trade Center, now operational, brought new institutional strength to the region.

Technology initiative: Ohio's cluster-based development project focused specifically on the aerospace industry cluster and sought to both develop the aerospace cluster in the state and to leverage aerospace-related technology for broader industrial development. One of the most important action initiatives to come out of Ohio's efforts is an industry-driven, technology development program. The Ohio Aerospace Institute is a university-business-government collaboration. Now with a staff of 45 and a budget of \$15.4 million, augmented by 2,400 researchers and faculty at nine universities, OAI's main activities include: a technology research program designed to meet market-driven needs; collaborative technical networks established around specific technology areas; technical consulting services; and educational programming.

Emerging industry initiative: Southwestern Pennsylvania's cluster-based economic strategy aims to develop the region's strengths in high technology and advanced manufacturing industries. Biomedical technology is a particular focus due to the prevalence of research, engineering and manufacturing strengths at regional universities, hospitals and corporations. Within this field, regional leaders recognized a unique competency in tissue engineering and established the Pittsburgh Tissue Engineering Institute (PTEI). Bringing together universities, hospitals and supporting organizations, the Institute facilitates collaborative research and technology commercialization. Already the Institute has helped generate two spin-off firms and attract biotechnology firms to the region to participate in PTEI.

Institutional restructuring initiative: One of the most significant initiatives arising from Florida's Cornerstone and Enterprise Florida initiatives was the "privatization" of the state Department of Commerce. With strong support from the governor

and private sector leaders, many key functions of the department were shifted into a newly formed organization called Enterprise Florida. The process took several years to complete and, even now, is not without controversy. As an example of an innovative action initiative with implementation challenges, however, Florida's change in organizational roles and responsibilities is instructive. If recommended absent the context of a new, cluster-oriented approach to economic development, no change of this magnitude could have been undertaken.

Chapter VIII

Summary: Cluster-based economic development

Four economic development trends

While the experience of American regions in developing cluster-based initiatives for their economies is still evolving, cluster-based economic development reflects four broad trends underway in the practice of economic development. These are:

- *Reaching out to the region not just the jurisdiction:* Think about economic development regionally, across the administrative boundaries that constitute the “commutershed” or within which residents live.
- *Emphasizing clusters not single industries or firms:* The inclusiveness of the cluster process enables regional stakeholders to “convene the marketplace” so that buyers and suppliers for each industry group—whether they are public or private—can learn from each other and develop better solutions.
- *Focusing on building broad input advantages not narrow incentives:* In a competitive marketplace the formation, expansion or attraction of industry in a region will depend on how much better that region can supply a range of the specific inputs needed by many clusters in comparison to other regions, rather than whether or not a specific tax incentive or temporary subsidy can be introduced.
- *Acting collaboratively not unilaterally:* Regions that create new sources of economic advantage on a continuous basis are able to do so because they build strong constituencies across the community for change, reach agreements on responsibilities for action and harness the capabilities of all sources of inputs (e.g., companies, schools, government agencies) to make investments, rather than simply delegating government to act alone.

Engaging suppliers in a dialog with their customers

Overall, cluster-based economic development is integrative and can elevate economic development from an often compartmentalized and isolated activity that focuses on just one project at a time. The cluster-based approach is not exclusive of other economic development processes, but brings together all the stakeholders in the marketplace to focus on when and how they can act together in self-interest to develop the regional economy.

The cluster-based approach can achieve a leveraged impact on economic development through engaging the region’s key suppliers in a dialogue with their customers:

- *Linking education providers with workforce managers:* Education institutions from K-12, vocational trainers, community colleges, universities, and private trainers will meet with their industry counterparts in each cluster to understand skill needs and develop new ways to prepare workforce skills for each cluster, often involving industries in each cluster in workforce preparation and development initiatives.
- *Connecting technology providers with product developers:* University faculty members, staff from research centers, commercialization programs, research institutes, national and federal laboratories, and private vendors will meet with their counterparts in established or emerging industries to learn about market needs and institutional constraints on improving the flow of innovation to specific cluster companies, resulting in solutions comprising a mix of institutional policy changes, new intermediary mechanisms, networks and partnerships between suppliers and users.
- *Matching financial investors to new or existing enterprise:* Representatives of commercial banks, development corporations, venture capital companies, investment banks and private investor networks will meet with companies in specific clusters to understand their financial needs and risk management challenges and develop actions together to facilitate the preparedness of firms, the generation of qualified deals and the brokerage of actual financial transactions.
- *Shaping physical infrastructure to meet industry operational needs:* Representatives of state and local transportation agencies, airport and port districts, planning agencies, power and water utilities will meet with companies in each cluster to learn how to integrate plans for infrastructure with strategic requirements of industries and from this prioritize or adapt plans and programs to improve transportation infrastructure and industrial facilities.
- *Investing in information infrastructure to enhance cluster performance:* Representatives of regional telephone companies, cable operators, wireless and satellite providers, switching and network service providers and systems suppliers will meet with each cluster to understand their individual and shared communication needs and work to define and provide systems and services which contribute to communications advantage. It may also involve better connections between and improved services to the public infrastructure, including schools, universities, laboratories, and regulatory and tax systems.
- *Adjusting administrative systems to maximize cluster productivity:* Representatives of state and local tax, environmental, zoning and building code agencies will meet with stakeholders in each cluster to learn about opportunities, constraints and costs for maximizing administrative intent while minimizing burdens on industries through cross-jurisdiction initiatives to harmonize and simplify, as well as automate systems.

- *Bringing housing, health and social service providers together with clusters:* To ensure the quality of life needed by growing clusters, public and private housing developers, and representatives of zoning and development agencies, hospitals, health insurers and health plans and social service providers can meet with industry clusters to better understand their employee needs and collaborate in developing actions to improve the supply of housing, the affordability and access to health insurance, and the availability of supportive services for parents and children, from childcare to older adult housing.

Budgeting for the stages of cluster initiatives

States and regions across the U.S. have undertaken cluster-based economic development initiatives investing differing amounts of money at each stage to achieve their objectives. While some regions have had access to substantial resources to support their initiatives others have had fewer resources and had to use “lower budget” approaches. There is no standard cost for accomplishing a successful cluster initiative. The budget for undertaking all four stages can be expected to range from a minimum of about \$100,000 where there is limited resources and considerable in-kind resources to budgets extending into the millions for efforts involving large scale and broad reaching action initiatives. What is key from a budgetary perspective is not the total “dollars” allocated to an initiative but, rather, success in securing commitments for cash and in-kind contributions from as diverse an array of sponsors and participants as possible. In the end a cluster initiative is about investment in change and not about spending. Therefore, initiatives that engage the most participation will often achieve more than initiatives that spend the most money.

Conclusion

The challenge of effective cluster-based economic development is to bring industries and their public and private suppliers together to share responsibility for the outcomes of economic development actions (Exhibit VIII-1). The goal is to achieve tangible outcomes and to use those initial outcomes as a platform for ongoing improvement in the regional economy. The reality is that regions often do not have the experience and commitment to bring users and suppliers together in a constructive, solution-focused process. Yet the effort to be inclusive in cluster-based economic development pays off even when modestly accomplished. By changing the terms of the dialogue within the regional economy, businesses, government and other institutions can create new bridges between their respective interests and develop new ways of achieving their goals together, while giving up the traditional unilateral view of economic development as being “government’s” job.

Future regional cluster-based economic development initiatives will benefit from the experience of public and private sector stakeholders and the body of economic development professionals who have worked on cluster-based efforts. As the logic and tools

of cluster strategy become better integrated into the vocabulary and practice of economic development, regions nationwide can look forward to creating more inclusive and market-driven economic development environments.

Exhibit VIII-1 Summary of cluster development lessons learned

Stage 1: Mobilization—Catalyze awareness and lay groundwork for action

- Utilize economic challenges to mobilize regional stakeholders.
- Identify an institutional structure to support the cluster strategy process.
- Develop broad private and public sector participation and early “buy-in.”
- Cultivate responsible stakeholders and “champions.”

Stage 2: Diagnosis—Identify cluster performance and regional assets

- Use neutral and independent analysts for credibility.
- Build community participation into the diagnosis of clusters and economic infrastructure.
- Employ cluster analytical techniques to identify regional strengths and opportunity.

Stage 3: Collaborative Strategy—Convene the marketplace to innovate

- Hold events that engage participants from key industries and institutions in the region.
- Use cluster working groups of industry and economic infrastructure to build an inclusive process.
- Select working group leaders who are committed and can recruit high profile participants.
- Develop accountability mechanisms and milestones to track progress and action.
- Focus on concrete actions plans for initiatives, with responsible champions.
- Subject action initiatives to a market test to ensure their need, stakeholder support and feasibility.

Exhibit VIII-1 Summary of cluster development lessons learned (cont.)

Stage 4: Implementation—Build and sustain momentum

- Identify and organize an institutionalized stewardship group to ensure implementation progress.
- Use the cluster framework to facilitate supply and demand side connections.
- Develop diverse strategies to secure and renew resources to support initiatives.
- Sustain and cultivate leadership to guide and take ownership for initiatives.
- Monitor and communicate results, reward and reinforce continuous innovation.

Appendix A

Resources on regional cluster development

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Appendix B

Cluster development checklist

Stage 1: Mobilization

Objective: Develop leadership group (working with sponsors) committed to overseeing and participating in the cluster-based economic development initiative.

- Does the regional culture facilitate collaborative problem-solving?
- Do civic leaders concerned about the region's economy recognize the need for collective action to confront today's economic challenges?
- Does the region have a history of "working together" on regional problems?
- How developed are the region's leadership resources?
- Can the region's economic challenges be discussed in ways that will elicit the concern and involvement of others?
- Which specific regional stakeholders can catalyze action? Do they agree with the need for collaborative action?
- Can a leadership or "stewards" group be built?
- Are the leaders and other participants representative of the principal businesses and institutions in the region?
- Can the goals be defined to engage key participants?
- Are participants motivated by self-interest to work for region-wide interests?
- Is there broad and "visible" buy-in to both the challenges and the goals?
- Is there commitment to move forward by leaders "with clout"?
- What resources are necessary to support the cluster effort? Are they available?

Stage 2: Diagnosis

Objective: Identify the region's "cluster" structure and competitive position, and understand their prognosis and challenges.

1 How is the regional economy performing?

- How have employment levels, per capita income, and gross regional product changed over the past decade?
- What are the regional trends in industry-specific employment, output and growth of new firms?

- What are the “baseline” projections for future economic performance, if no action is taken?
- 2** What is the condition of the region’s cluster “portfolio”?
- What definition of “cluster” is useful for carrying out a diagnosis of the regional economy?
 - What is the region’s capacity for analyzing cluster-based trends? Where does “practical” expertise reside?
 - What are the region’s industry-clusters and what are their current levels, concentration and growth of employment and output?
 - Which clusters are the largest employers in the region, historically? How do they compare in size to other regions?
 - What share of total employment and output do the largest regional clusters represent? Are the largest clusters concentrated in a few firms or widely dispersed?
 - How is activity within each cluster distributed along the “value chain,” i.e., are there many product and supplier firms, are there many different types of industries within the cluster? How vertically and horizontally integrated is the cluster? Where are the “gaps”?
 - Which clusters are growing faster? Are business “buyer-supplier networks” forming?
 - What are the region’s emerging industries and clusters?
 - How does the performance of the region’s clusters compare to similar clusters in other regions, the nation, and worldwide?
 - What is the outlook for each cluster’s performance for the next five years? Is it feasible to expand any of the region’s clusters?
 - What are the strategic challenges facing each cluster according to business leaders, market analysts, public officials, etc.?
- 3** What economic advantages does the region provide to its clusters?
- Who are the region’s providers of economic infrastructure, i.e., public and private sources of technology systems, human resources development, financing, physical infrastructure, information infrastructure, quality of life, and tax and regulatory systems?
 - Will the diagnosis address the broad range of providers, or a few providers in a few categories?

- What is the current capacity and growth potential of the “economic foundation” providers?
- Are industry representatives satisfied with the quality and quantity of resources available?
- What are the comparative strengths and weaknesses of the region’s economic foundations benchmarked against other competing regions?
- For problem areas, what are the practical constraints of and priorities for providing any specific type of supporting economic infrastructure?

Stage 3: Collaborative strategy

Objective: Develop collaborative actions that will improve the competitiveness of individual clusters and overall regional economic performance.

- Are the initial “stewards” still committed to the regional cluster effort and using their clout to recruit appropriate new leaders to guide the collaborative strategy process?
- Are key stakeholders developing the collaborative strategy? Are representatives from large and small companies, government, and other public and private “economic foundation” providers involved in each cluster “working group?”
- Do leaders and participants in each cluster working group recognize their mission to reach a shared view of economic advantages, challenges, and opportunities to enhance competitiveness? What are the priorities for action?
- Are participants willing to “suspend” individual competitive goals in the interest of working collaboratively to improve regional competitiveness?
- Do cluster-specific recommendations have an action plan and action team to lead and carry out strategies?
- Have “cross-cutting” action strategies which benefit several clusters or overall regional competitiveness been identified?
- For all strategies, are action agreements (“business plans”) in place; have team members established accountability, resource requirements, and schedules?
- Are action plans closely tied to measurable outcomes? Are performance measures drawn from the diagnostic assessments of the region’s clusters and of their supporting economic infrastructure?
- Beyond those directly working on the strategy, who is aware of its potential for the region?

Stage 4: Implementation

Objective: Create an organizational system to implement action initiatives and to sustain the cluster-based effort by reviewing outcomes and by preparing new cluster-based regional actions.

- Are leaders and stakeholders still committed to action? Are participants still motivated by self-interest to work for region-wide interests?
- Who is responsible for oversight of the cluster-based implementation effort? Are there adequate (even if modest) resources in either existing or new organizations to minimize fragmentation of the effort?
- Have the cluster working groups identified (or created) organizations with the internal capacity, authority and independence to carry out action initiatives? Are action plans and action teams “institutionalized” in existing (or new) non-profits, for profits, partnerships, network or alliances?
- Are there mechanisms for tracking progress and providing ongoing feedback, benchmarking, and troubleshooting?
- Is a communication and outreach program needed for cluster-specific and cross-cutting, regional initiatives?
- Is the “cluster logic” becoming institutionalized in agile and adaptive ways? Are new, cluster initiatives encouraged? Who will update the regional cluster diagnosis and when?